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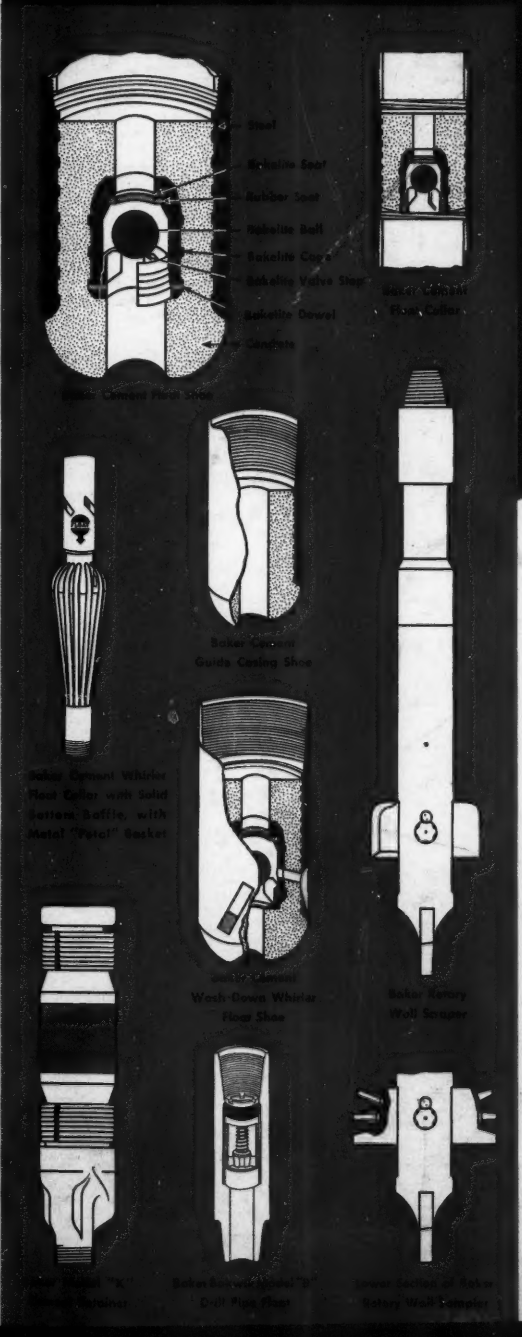
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OIL WORLD
and Petroleum Industry

THE AUTHORITY ON THE CALIFORNIA OIL INDUSTRY

SECOND ISSUE
OCTOBER 1939
VOL. 32 NO. 20
WHOLE NO. 1547

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GEORGE S. MacDONELL, Manager, California Oil World Directory

California Oil World and Petroleum Industry is published twice a month at 828 Petroleum Securities Bldg., 714 West Olympic Blvd., Los Angeles, California. Entered as Second-class Matter January 1, 1937, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price: $1 per year in U. S. and Possessions, $2 in foreign countries, including Canada. Member of the Audit Bureau of Circulations.

October 24, 1939

Telephone Number RIchmond 2136

Real Significance of the Cole Bill Reveals

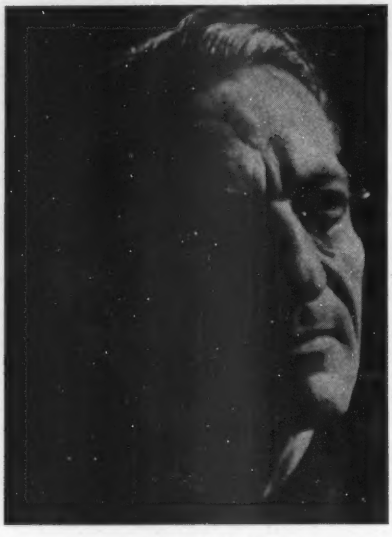
Nationalization Wedge, Attorney Says

By Robert M. Pease*

The Cole Bill is not dead. It merely has been in a state of opossumitical quiescence since adjournment of the last session of Congress. It may be revived during the present special session and if not it is most probable that it will renew its gyrations soon after the first of the next year.

Let Congressman Cole himself epitomize his Bill for us:

> "The purpose of this bill is to prevent avoidable waste in oil and gas production in the fields of the United States. This purpose conforms with the policy expressed in the report on 'Energy Resources and National Policy' recently transmitted to the Congress by the President.
>
> "An office of Petroleum Conservation is to be established as a civil service unit in the Department of the Interior, to be headed by a commissioner appointed by the President. The bill does not establish a board or a multi-headed commission. Pertinent oil activities of the federal Government will be consolidated in the office of Petroleum Conservation in order to provide a coordinated national policy on oil conservation.
>
> "The commissioner is authorized to investigate and determine if oil or gas is produced wastefully in any field in the United States. If investigation develops that waste does not occur, notice to that effect will be given to state officials, operating companies, and the public. If waste is found to occur, as determined in accordance with standards established in the bill, findings to that effect will be made and regulations issued to provide for the elimination of such waste. State officials and operating companies will be properly notified of such findings and full opportunity given for correction. If waste is not found or if corrected, the commissioner will take no further action.
>
> "When waste has been found to occur and corrective measures as set forth in the regulations have not been applied, the commissioner is authorized to institute legal action to compel the prevention of waste and, in addition, the Connally Act, of February 22, 1935, as amended, is broadened so that transportation in interstate commerce of oil produced wastefully also is prohibited.
>
> "The bill intends to develop fullest possible cooperation between state and federal officials and the oil industry in the prevention of waste. To this end a Council on Petroleum Conservation is established.
>
> "The bill is designed solely as an oil and gas conservation measure and does not attempt to control supply through the establishment of production, marketing or transportation quotas; does not affect imports or exports of petroleum; and does not provide for any coordinated industrial action in refining and marketing."



Robert M. Pease

Observe the penalties which this Bill will carry if it goes into the books. Maximum fine of one thousand dollars per day, or imprisonment for two years, or both. For other violations: maximum fine of five thousand dollars, or one year, or both. Any person who directly or indirectly controls the acts of omission or commission which constitute a violation is equally culpable and can go to jail too. Directors and executives can get gray hairs about that last provision. This Cole Baby has teeth.

If the Administration has its way it is not at all unlikely that the Bill will be amended to embrace control of production, and perhaps marketing practices and price. The Administration apparently wants this control of all natural resources. The Navy seems to want it. "Honest Harold" cries for it on every occasion like a peevish child. The war hysteria and the blarney concerning conservation of oil for national defense easily can bring an expansion of Mr. Cole's Bill, or a substitute measure, with a much wider scope. Whichever way the Bill results, the fundamental objection condemns it.

While partial or complete federal control of the oil industry is something which should make the producer, refiner and marketer shudder, the full import of such extension of the federal authority goes far beyond the immediate concerns of the oil industry and any other business. It strikes at the foundation of our entire governmental system, a foundation which has suffered so many severe blows in recent years that it cannot withstand many if indeed any more.

The freedom of action which people in this nation have enjoyed for many decades has come to be so much a part of our lives that we almost have ceased to think about it and have ceased to fight the things which will destroy it. Especially the business man, absorbed by his own immediate problems and work, has been unmindful of these hazards. Whatever may be the motives behind it, good or bad, every loyal student of this governmental system knows that the trend of vesting more and more power in the federal government to bring us to disaster. The busy man of commerce does not always perceive this. If he is not active and attentive to these elementary principles, things as simple as the A B C's, he will be like the swimmer who goes out with the tide and does not realize his jeopardy until he feels the full pull and then tries to return. The swimmer does not always return—right side up.

For our own preservation we must look at this simplest of governmental principles, with a glimpse of the Cole Bill from the corner of the eye, and see where we are headed and then change the course. There is nothing abstruse, academic or theoretical about it. It is the clearest common horse sense. That principle is that there must be a division of power, and not a concentration of power, if freedom as we have known it is to be maintained.

Nothing was plainer to those old boys who went through the agonies of our Revolutionary war than whatever system of government they created it must be, it had to be one wherein powers were divided, always divided and never, never centralized in one jurisdiction. Anybody can understand that. They did precisely that in the constitution when they delegated a few essential powers to the federal government and retained all others for the states themselves. The preclusion of centralization of control of our actions is the very reason we do have freedom of speech, freedom of worship, of the press, and a wider range of personal freedom than any other people in the entire world. We are dangerous-

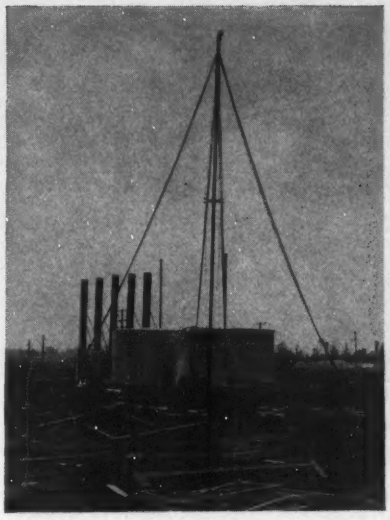
*Attorney at Law, Los Angeles, Calif.

ly near the precipice. There is no greater internal danger in this nation today than this constant surrendering and yielding of state's jurisdiction and control of their own affairs to the centralized federal government.

The reasons for this are as glaring as a Neon sign on the front of a cocktail parlor. Administrations are but aggregations of human beings. Groups of human beings behave as do individuals. Man is so constituted and so inherently ornery that his acquisition and possession of power begets a consuming lust for more power. It's the nature of the beast. Continue to bestow powers upon one man in a comparatively small group of men and we will land just where the authors of the constitution did their best to keep us from landing. Soon we will have surrendered so much power that we will have left not enough to combat the inevitable abuse of that power. Every tyranny which history records and which was not gained by outright force of arms was created by this gradual acquisition of control of the people's conduct and affairs, usually with the victims' misapprehension that somebody had a benign paternal desire to gain and utilize that control for the good of all the subjects. This time it will not be done in one fell swoop, if done at all. It will come through the insidious, slow but constant encroachment upon your state's rights and hence upon your liberty. Tyrannies evolve that way. Liberty is lost that way.

As centralized government or authority acquires more power it becomes more and more impatient with the restraints which remain. Soon it is intolerant of any restraint. It must do away with the cumbersome processes of democratic government. It must plunge directly to the objective and cannot be bothered by the slower procedure of consulting the people or permitting the taxpayers to voice their views and desires. Democracy in action means delay. It is slow. Its restraints are cast aside. Does the constitution stand in the way? Find a way around it, circumvent it. Some radical change which other constitutional restraints deny to the federal government? Dress it up as a tax measure and shove it through. Does the Supreme Court stand in the way? Get a new Supreme Court then, one which won't stand in the way. It is but a step further to get a rubber stamp congress and ultimately to divest it of its powers. The impatience and intolerance which first appear in the adolescence of this growth all too soon have the vigor, the consuming passion and the propagating virility of full maturity.

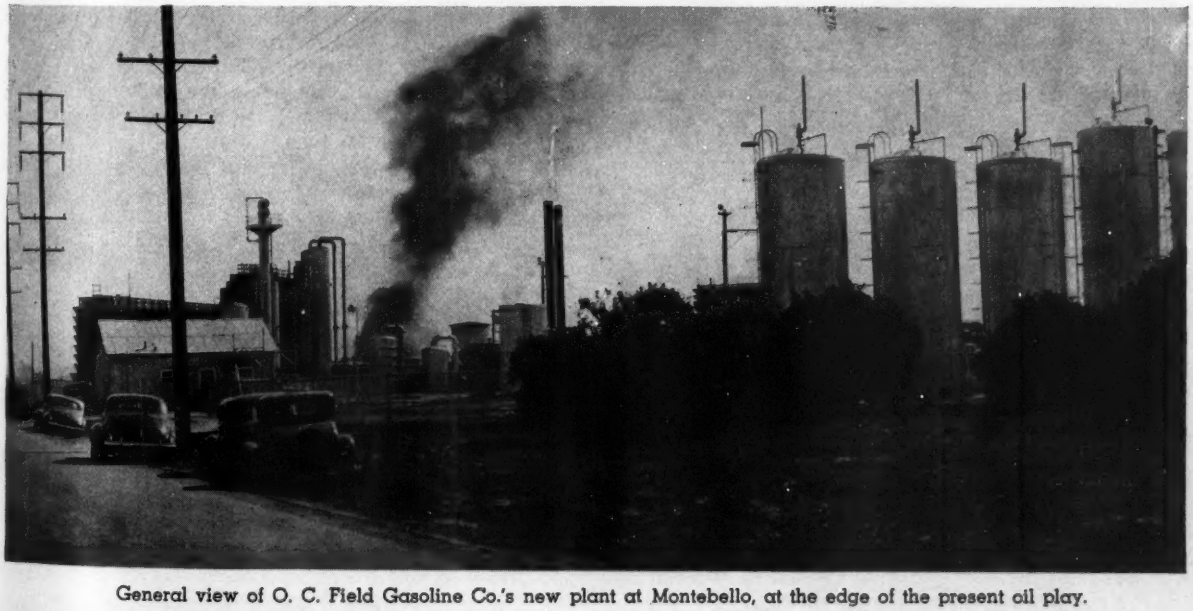
Who has had to deal directly with the new federal bureaus without encountering this very intolerance of the few restraints which still stay the strong arm of the government? We won't go into the arbitrary antics under the Wagner Labor Relations Act. Just one other example should suffice. During the days of the N. I. R. A. and the Petroleum Code we filed many protests against the Petroleum Administrator's orders (and never could get a hearing). Apprehending that by availing ourselves of any procedure under the Code we might be waiving our constitutional rights, we always stated a reservation—that we protested with full reservation of our constitutional rights, etc. One day one of



Steel derricks continue to go up in the new Montebello play.

the gentlemen from Washington, a lovable chap and I had known him for years, called and asked me to send a certain recommendation or suggestion to Secretary Ickes. I said I would do so, by letter. I had no thought of and there was no occasion for my stating the constitutional reservation because it was a purely personal, informal matter. As my friend, the Washington official, was leaving the room, he turned and in all seriousness said, "And Bob, please," (accent on the please) "when you send that letter, don't add your constitutional reservation. You know, that's just like waving the red flag at the bull, with those fellows back there in Washington."

Merciful God! Washington, Mad, be-



General view of O. C. Field Gasoline Co.'s new plant at Montebello, at the edge of the present oil play.

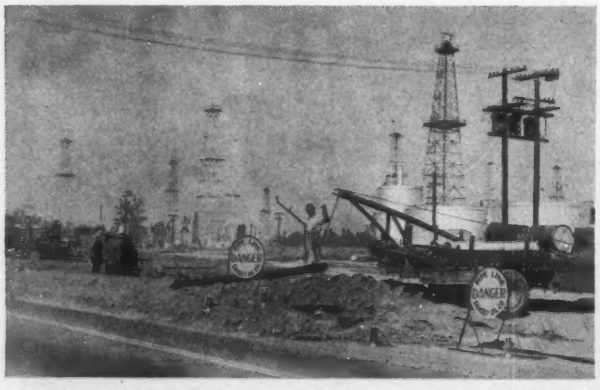
The new equipment shown in the foreground in the pictures above are destined for the compression unit. O. C. Field Gasoline Co. completed the absorption side of the Montebello plant Sept. 1, and current construction should be finished by the end of the month. This plant represents an investment of more than $200,000.

cause I, to preserve our employers' constitutional protection, dared to suggest that citizens still could put the brakes on Washington and that we still had a constitution! Washington roiled when we made bold to remind that what the bureaucrats were doing to us was without sanction of law or consent of the citizens. Washington, asking a personal favor of me, and imploring me,—even little me,— not to rub their precious fur the wrong way by politely suggesting that those public servants were not entirely free to do as they chose to do with the property of others! Who in H——l did they think they were, anyhow? Our Almighty Masters, or our servants living on our taxes?

That is all gospel truth, every word of it. It is only one of many instances. It is but one sample of what you will get as federal centralized control increases. The unscrupulous, even the self-appointed "good hearted" guardians of your "welfare," they all fall into the same intolerance. They always did, they always will. 'In other hands these powers would be abused; in ours you are safe.' The more power they acquire, the more reason they see for taking the short cuts of dictatorship: reaching their solution of your problems without bothering themselves with the annoying democratic practice of permitting you to hear some word in the disposition of your own affairs. It is as inevitable as a gastronomical upset after eating green apples, a hangover after unwise indulgence, or a dry hole for drilling into granite against the advice of your geologist. You can't get away from it.

Just as the summation of a long column of small debts gives a staggering total of accounts payable, so will this increasing relinquishment to the centralized federal government bring a bankruptcy of freedom. You cannot escape that either. The Cole Bill is another figure in the debit column, without any offsetting credit. Wholly regardless of its effect upon the petroleum industry—and that is important too, I know,—you, for the sake of you and yours and those to follow, cannot find justification for permitting the federal government to grab this one bit more of your state's jurisdiction. We then will go a step farther, and still another step, as we have been doing. Grant that regulation of rate of drilling and production by individual states never will produce an harmonious whole. Grant that regulation of rate of drilling and production by individual states always will leave some national discord. Grant that the circuitous route of voting and a voice in government always is more confusing and less direct than the raucous unanswerable voice of a Hitler. Grant that it takes a longer time to accomplish an objection through democracy than it does through dictatorship. Grant all that, but strike the balance and you find that with all its awkwardness, with all its confusion, democracy when it does reach its goal, democracy and democracy alone still leaves you and yours free to breathe and speak and act as you see fit, unafraid to voice your objection to what your public servants are doing, and free to effect a rectification if you have enough fortitude to move in.

It was to leave us free to move in and by peaceable means to correct wrongs and abuses that your fathers and mine hacked a clear clevage between the limited powers of the federal government and those reserved by the states. Surely, the production of petroleum in some degree does affect inter-

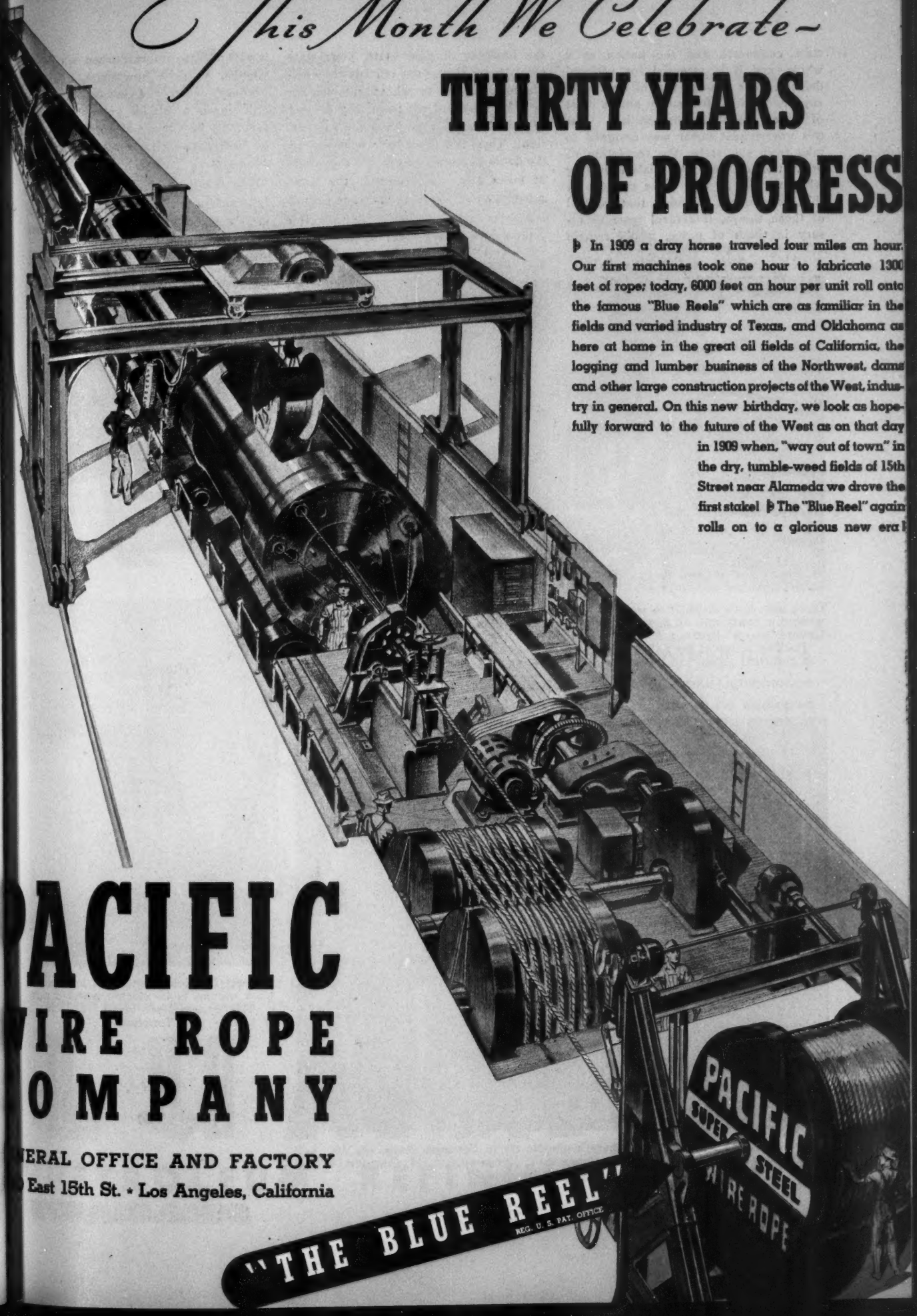


Sunset Oil Co. is taking advantage of a forced (street widening) moving job to touch up a section of its pipeline at South Figueroa St. and Rosecrans Ave.

A closeup of the Sunset Oil Co. pipeliners on the Figueroa St. job. They are left to right, William McBeth, R. E. Blakemore and George Rainsford.

This Month We Celebrate—

THIRTY YEARS OF PROGRESS



Þ In 1909 a dray horse traveled four miles an hour. Our first machines took one hour to fabricate 1300 feet of rope; today, 6000 feet an hour per unit roll onto the famous "Blue Reels" which are as familiar in the fields and varied industry of Texas, and Oklahoma as here at home in the great oil fields of California, the logging and lumber business of the Northwest, dams and other large construction projects of the West, industry in general. On this new birthday, we look as hopefully forward to the future of the West as on that day in 1909 when, "way out of town" in the dry, tumble-weed fields of 15th Street near Alameda we drove the first stake! Þ The "Blue Reel" again rolls on to a glorious new era!

PACIFIC WIRE ROPE COMPANY

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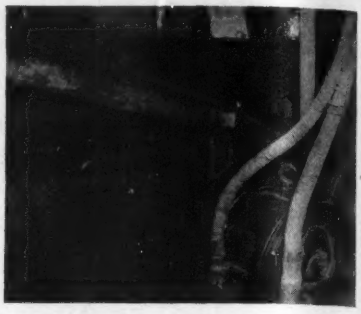
state commerce and the nation as a whole, and it is essential for national defense. The same is true of coal, iron, copper, textiles, foodstuffs and a host of other essential commodities. But this government never was designed to take from the states the regulation of production of those essentials excepting when we are at war. The creators of this government intended that control of those things, if control were necessary in times of peace, would remain the business of your state, your state officials you elect, your officials responsible to you, and to whom you can go in short time and tell them they are out of bounds when they jump the reservation. Then you don't have to pound on the doors of appointed officials thousands of miles away to have only the futile satisfaction of pounding and then pounding some more. Whether the Cole Bill retains its present form or whether it is expanded to embrace when, where and whether to drill, how much if any to produce, when and where to market, still this is a job for your state, if the job must be done, and not for a bunch of "foreigners" on the other side of the continent.

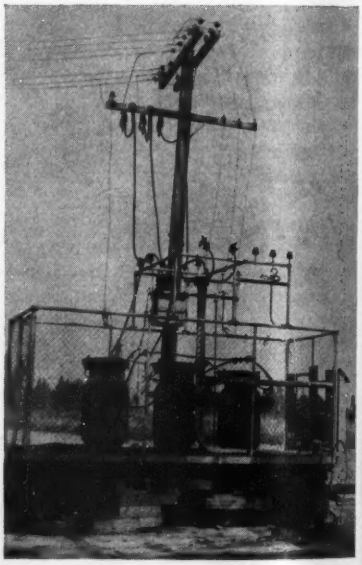
Why not the Cole Bill? I say because it is another arrogant trespass upon our state's rights and another direct attack upon our liberty. What say you?

These men have drilled five wells for Long Beach Oil Development Co. in the Harbor without a break and all flowing. They are, left to right, J. A. Weaver, H. F. Redman, George "Scotty" Hocking, A. E. Crow, J. Parkinson, all of Kellogg Drilling Co. "Scotty" Hocking is one of the Kellogg partners. The others are Karl Kellogg and Charlie Andrews.

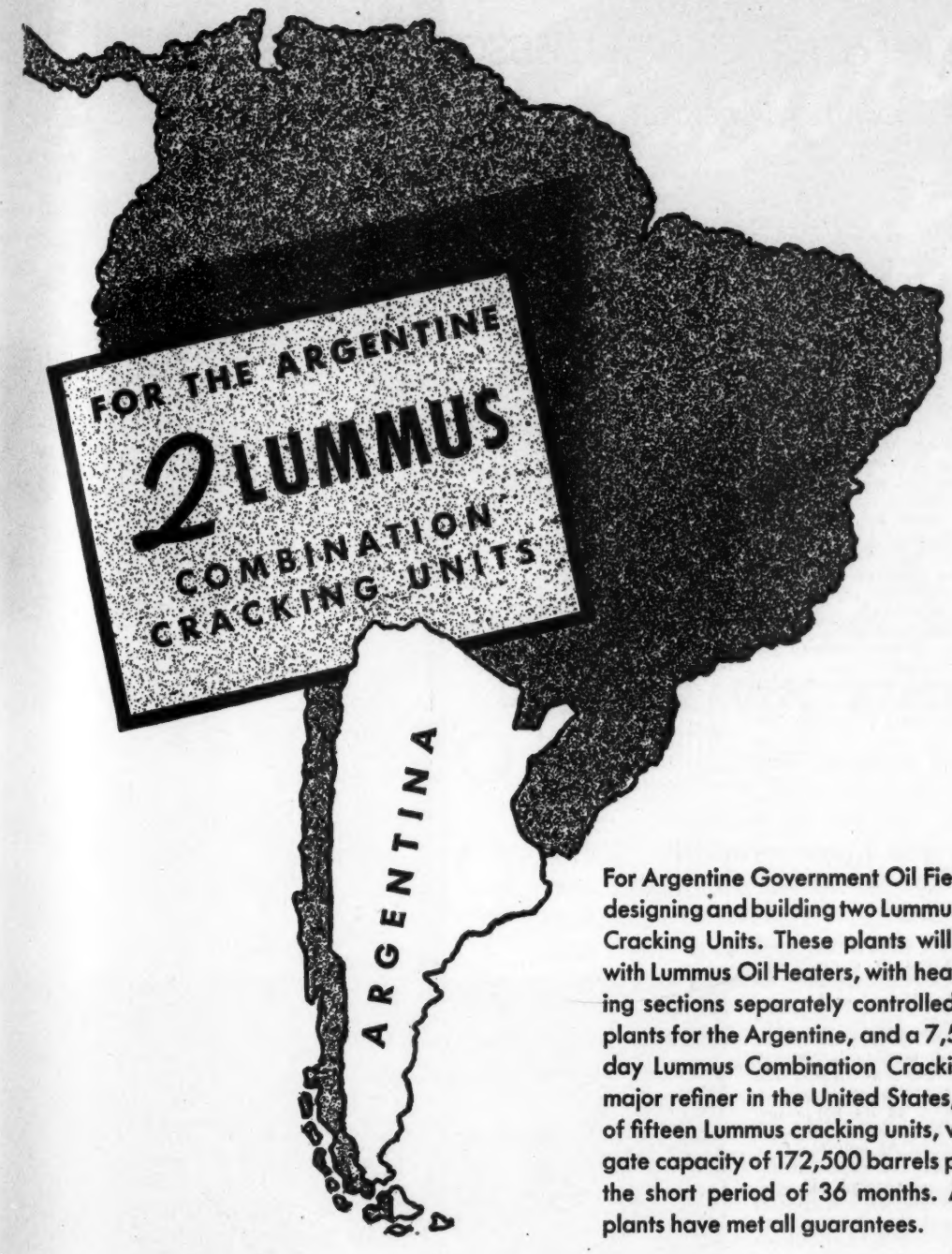


General Petroleum's Poggi No. 15 power plant, Torrance. Front are the two Westinghouse motors, 65 H.P. each. Center is the Hild drive to drawworks, and in the rear, the 9-speed Westinghouse throttle control.

Here are the fellows who run General's electric rig in Torrance, Poggi No. 15. Left to right they are: T. N. Dodd, W. E. Corcoran, L. Hammerson, L. M. Cameron, W. R. Smith and J. M. Sprague.



General Petroleum sends this transformer truck around to its electric powered rigs. This system feeds Poggi No. 15 in Torrance.



For Argentine Government Oil Fields, Lummus is designing and building two Lummus Combination Cracking Units. These plants will be equipped with Lummus Oil Heaters, with heating and soaking sections separately controlled. » » » These plants for the Argentine, and a 7,500 barrel per day Lummus Combination Cracking Unit for a major refiner in the United States, make a total of fifteen Lummus cracking units, with an aggregate capacity of 172,500 barrels per day, within the short period of 36 months. All completed plants have met all guarantees.

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LUMMUS

PETROLEUM REFINING PLANTS

Gasoline and Compressor Plants

Use Air as Cooling Medium

C. N. G. A.
October Meeting

By

W. L. Rifenberick*

We think primarily of water as a cooling medium in gasoline plants, compressor plants and refineries. In such cases the products to be cooled are passed through a closed or open cooler and the heat transferred to cooling water, which in turn is cooled in a cooling tower. The cooling is largely by evaporation of water—some of course is by raising the air temperature, or sensible heat, as contrasted to latent heat in evaporating the water. This method is highly satisfactory but the water consumption or loss in the cooling tower, through evaporation and windage has a very material value and in many cases is a very important item in a gasoline plant's operating cost.

Not only do we have the water cost to pay but we have the problem of scale in certain waters which is no small problem in itself. In a number of plants, the cooling water is treated to reduce the scale on coils. It has paid to go to this expense in many cases.

If one uses a cooling tower and coils to, say, cool dry gas for sale, it is economical to cool the water to within 10° of the wet bulb and also to cool the gas to within 10° of the water. These approaches can be reduced to 5° instead of the 10° but the cost is materially increased, particularly on the cooling tower for zero wind velocity. If we must have the gas cooled to within 10° of the wet bulb at all times, the cooling system must be designed for zero wind because that condition exists during a portion of the time.

One has no control over air currents. The wind either blows or doesn't and man can not change it by anything he may do or want to do unless he provides artificial means of moving the air. For this reason many of us have felt the natural draft cooling tower has serious defects and have advocated the use of forced draft cooling towers. In this type of a tower, as its name implies, the air is partially forced through the filling in a vertical or counter flow manner. The water is consequently cooled irrespective of natural air currents. With this tower we can control conditions of air and thus have a control which we did not formerly have with the natural draft tower.

Let us look around at other industries and see how they have solved their cooling problems. Let us first look at the air conditioning industry. How do they get a portion of their air-cooling? We will, first, find that they frequently wash the air in an air washer. This does two things, cleans the air and also cools it by humidification. The humidity must in many cases be later removed for comfort reasons but the part we are interested in is that they cool the air by washing it, which means by evaporating sufficient water to essentially saturate the air. The water is thus refrigerated and the air is cooled by direct contact with the cold water.

We now have a cold, humid air to use as a cooling medium. There are several types of air washers. One is the spray type which will be described later and the other is the desert cooler—most of you are familiar with it. It is not used in as large sizes as the conventional air washer.

With a double spray air washer, the air can be cooled 95% of the wet bulb depression or the difference between the dry and wet bulb temperatures. Thus if the dry bulb is 100° and the wet bulb 60° the air can be cooled 95% of 40° or 38° and the cooled air will then be 62° which is 100 — 38: We now have a good cold air as a cooling medium to be passed across some sort of cooling surface.

Types of Cooling Surfaces

Let us next examine the available types of cooling surfaces to be used in extracting the heat from the product to be cooled. We must remember that the rate at which air can remove heat from metal is very low unless excessive air velocities are maintained. That is too costly to be economical. This point is very important in the selection of a

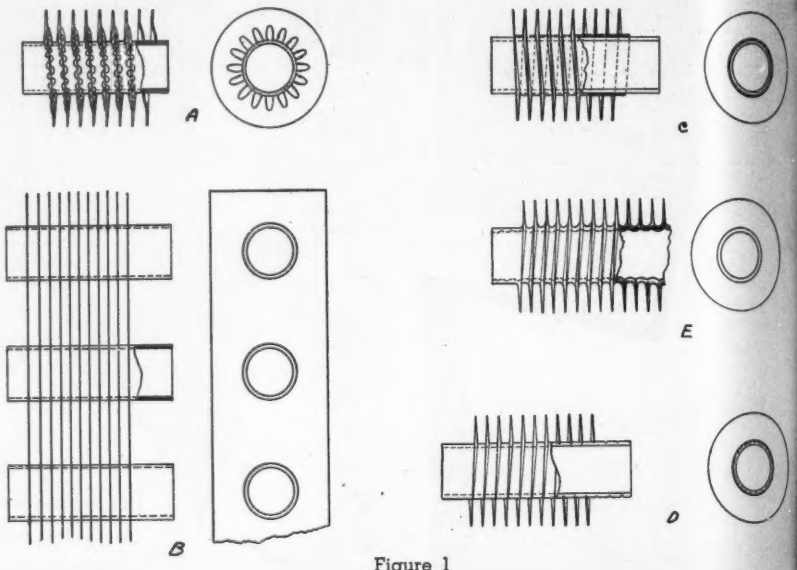


Figure 1

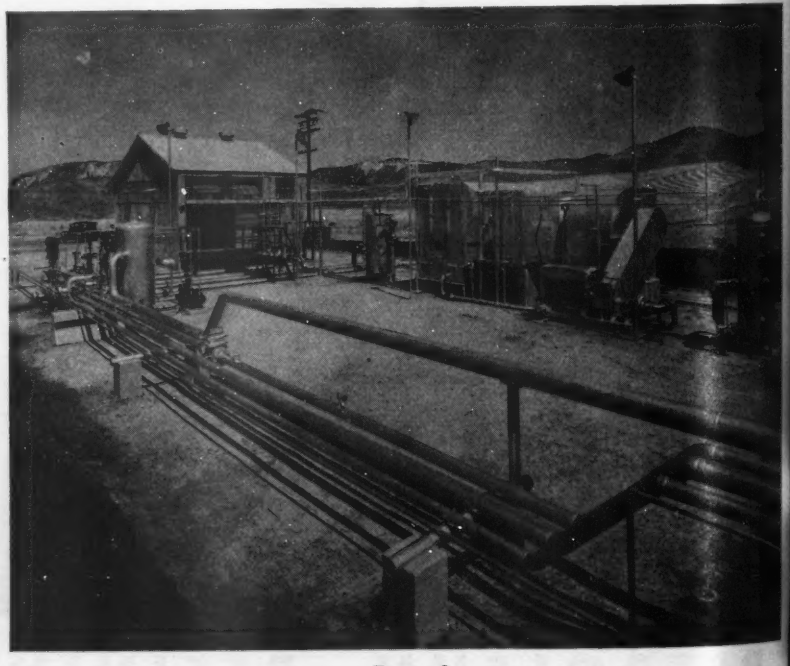
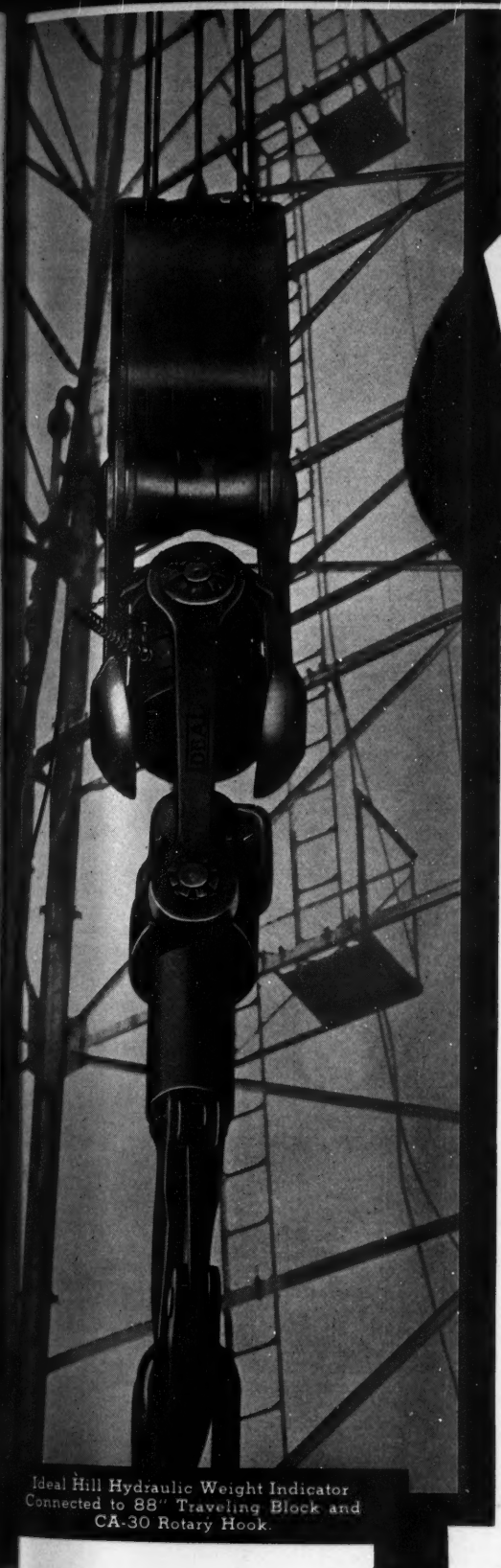


Figure 2

*Vice President, Industrial Engineers, Inc.



Ideal Hill Hydraulic Weight Indicator Connected to 88" Traveling Block and CA-30 Rotary Hook.

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IDEAL

"Reg. U. S. Pat. Off."

HILL HYDRAULIC WEIGHT INDICATOR

THE PRIME REQUISITES OF A WEIGHT INDICATOR ARE ACCURACY AND SENSITIVITY. THE DRILLER MUST BE SURE THE WEIGHT HE READS IS THE ACTUAL WEIGHT ON THE BIT, AND THE INDICATOR MUST BE SENSITIVE TO RECORD SLIGHT CHANGES IN WEIGHT. THESE TWO ESSENTIALS ARE ONLY AVAILABLE WITH THE IDEAL HILL HYDRAULIC WEIGHT INDICATOR.

This Weight Indicator is suspended from the traveling block in order to directly ascertain the weight on the rotary hook. It consists essentially of a cylinder which is attached to the traveling block and a piston which is attached to the hook. Fluid pressure in the cylinder is transferred through a high pressure line to the gauges.

Directly from the gauges, without the use of correction tables, the driller can observe the weight of the entire string, the weight on the bit, and the behavior of the drill pipe when running-in and coming-out of the hole.

Ask for Descriptive Bulletin No. 249.

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TULSA, OKLA.; TORRANCE, CALIF.

tube or surface to be used in connection with air cooling of a product.

1. First we have the plain everyday bare tubing which has nearly an equal amount of surface on the inside and outside. This tubing is uneconomical to use because if we have a high film coefficient on the inside and a low one on the outside, we must use an excessive amount of tubing. This is too costly a method of doing the work.

2. We then look for some means of increasing the external tube surface for a given inside surface. This brings us to the so called finned tube. This type of tubing can be obtained with various types of fins and each type has a definite value as a heat transfer surface.

If we refer to Figure 1 we will see sketched several different types of finned tubing. One of the earliest types was the corrugated type of fins used on the early automobile radiators and steam condensers used on cars like White and Stanley steamers. This type of tubing was made by taking flat ribbon and winding it on a tube. (Fig. 1a) The outside is a smooth spiral and is corrugated against the tube. This fin, so called, was then soldered to the tube to secure metal to metal contact. This is an extremely important feature of any fin tube. The contact between tube and fin must be good or the fin is useless. Also, the thickness of the fin and diameter is of importance.

On Fig. 1b we have flat sheets with tubes through them. This type is generally made by expanding the tube by mechanical or hydraulic means to give a good metal to metal contact between tube and fins. This type has the advantage of holding the tubing as a unit. Thus a solid unit is obtained. There is the possibility of losing the bond between tube and fin since the bond is only by pressure.

On Fig. 1c we have a smooth spiral fin which has a good soldered contact between fin and tube. In this case the fin is drawn or stretched to produce a smooth fin. This type is extensively used in air and nitrogen cooling for large electric generators.

Another type is Fig. 1d. It has a spiral cut in the tube and the spiral fin is secured by pressing the tube tightly against the fin on both sides.

Next we have the finned tube in which the tube and fin are an integral unit. It is shown in Fig. 1e. This product is made by starting with a thick tube. The fins are drawn in a spiral manner from the tube. The fin is thick at the tube and thin at the edge. This is correct from the standpoint of heat removal from the tube to the air. The fin also gives the tube considerable strength.

The above are generally speaking the main types of finned tubing. There are modifications. There is another type which has spines like a porcupine. The spines are raised from the tube and have a perfect contact with the tube. I know very little about this type in that it is relatively new.

Types of Air Movers

We will now consider the different types of prime movers of air and their respective advantages.

First, we will start with the conventional electric fan. It is a very economical type of air mover for large quantities of air with low head. They are of no use in building up static pressure but will impart velocity to air.

From this type we go to a modifica-

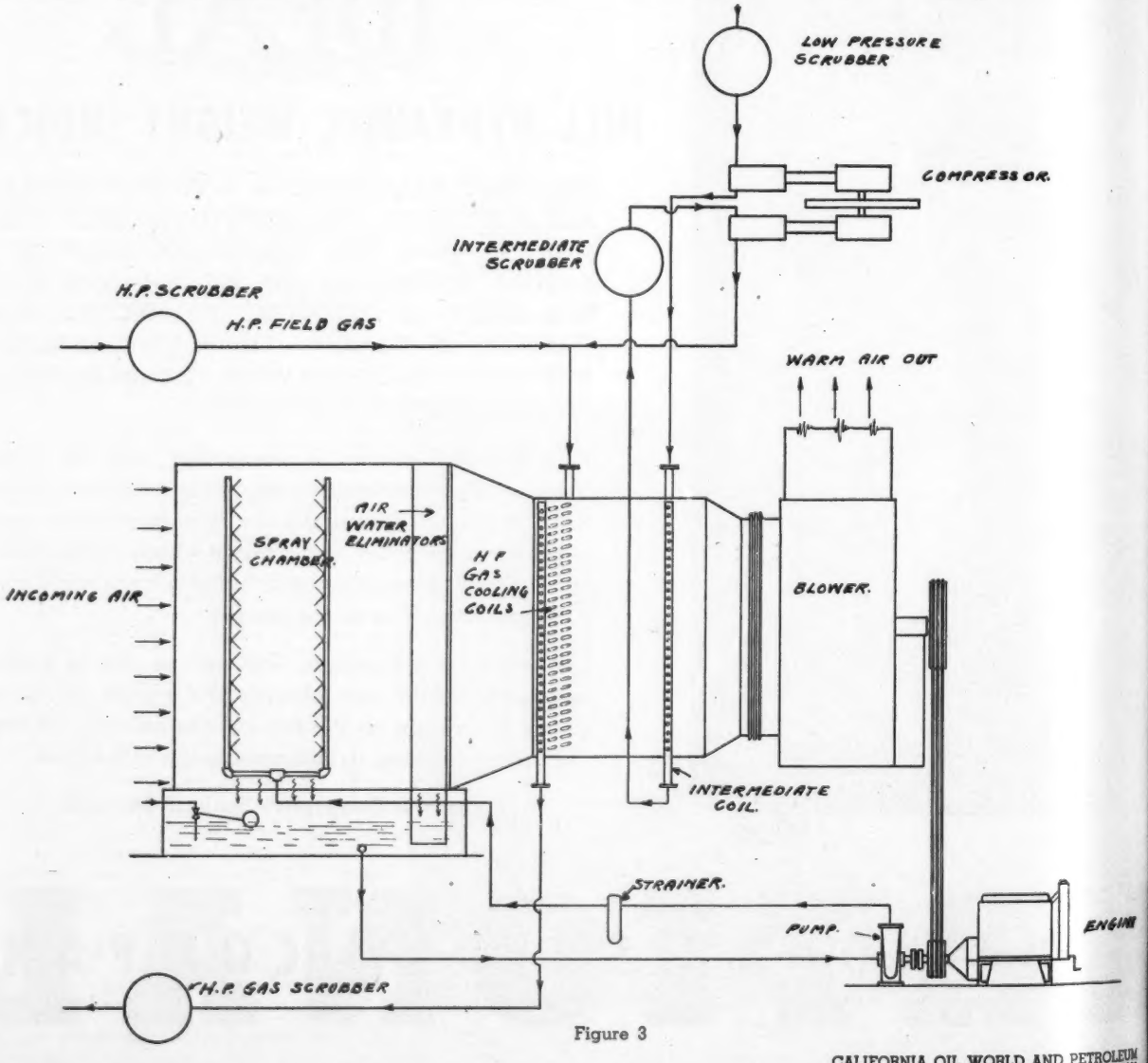


Figure 3

tion of the fan blade to what is known as the pressure fan. This fan can be used economically to build up static pressure of over one inch water with a single blade. The fan has a large number of blades with the center blanked off to prevent recirculation of air from the pressure side to the inlet. One manufacturer builds this type of air mover with as many as 4 blades in series. Two rotate in one direction two in the opposite. These fans will deliver a static pressure of 4" water. A slip ring motor is used with alternate blades attached to the rotor and the other two attached to the stator. The rotor and the stator each rotate in opposition to each other. The blades can also be belt driven.

A more generally used air mover for static pressure is the blower. It is used in air conditioning work etc., where static pressures are required.

The other type of air mover is the air compressor with which we are all so familiar. It, of course, has no field of usefulness except where pressures of several pounds are required. Blowers are also used in many lines of work like blast furnaces or cupolas. Large quantities at several inches of water are the order of this type of equipment.

Today low pressure air movers with efficiencies as high as 80% are not uncommon. They are like the modern centrifugal pump, they have very good efficiencies.

Application of Sub-Cooled Air To Cooling

We believe the first commercial application of sub-cooled air as a cooling medium in the gas or gasoline industry was in the Newhall Compressor Plant of the Barnsdall Oil Company. The plant is shown generally by Fig. 2. The compressor collects the low pressure well gas and compresses it in two stages. It joins the high pressure gas and the total then passes through the cooler before going to the gas company. The plant is designed to compress the gas to a minimum of 500 lbs.

Fig. 3 is a flow diagram of the gas cooling equipment. The interstage gas is air cooled on the end of the high pressure gas cooling. The warmest air is used because the temperature of the interstage gas is not very critical.

The process is described essentially as follows. The warm air is taken in through the front of the air washer (Fig. 3) then through the water spray. At this point there is a water fog through which the air passes and is cooled. It next passes through the air-water eliminators where all the entrained water is eliminated. The eliminators are sealed in the basin water. Cold air then passes over the high pressure gas coils. The hot gas enters at the point where the hot air leaves and passes out in contact with the cold air. In other words the flow is purely counter-current. The vertical rows of tubes are all connected in parallel to the gas headers, the flow is forward with the same number of rows in parallel. In all there are five horizontal rows of tubes. This cooler is designed to cool five million cu. ft. gas per day at 500 lbs. to within 10° of wet bulb or less.

The intermediate cooler is designed to cool two million cu. ft. per day. Room has been provided to install another intermediate cooler of two million ft. capacity at a later date.

The blower discharges the warmed air to the atmosphere. It can not be recirculated in any part through the cooler unit because of its saturated condition. As the air is warmed by passing over the finned tubes its ability to hold moisture is increased so there is no tendency to deposit water on the tubes. Due to this fact, the coils will seldom have to be cleaned.

The plant has been operating continuously since February 1939. The air across the cooling coils is clean and free of all dust, bugs and foreign matter which is ideal for contacting the finned coils. The coils are designed so that any part or all of them can be removed to clean by immersing in a cleaning solution.

The results from this plant under present operating conditions are of little value in that the plant is and has not operated at rated capacity. With a load of 1½ million cu. ft. gas per day, it is cooled from 1 to 3° of the wet bulb (by Sling psychrometer). Design conditions however, have been exceeded by a very comfortable margin on a test cooler for research purposes. Suffice it to say that a gas cooler with one sq. ft. face area will cool 83,000 cu. ft. gas per hour at 400 lbs. from 214° to 95° with 90° cooling air. The cooler has only four rows of tubes instead of five deep and the pressure drop across the coils is 0.7" water. Another test gave similar results of 5° approaches for the same quantity of gas with 0.5" pressure drop and 11° approach for an equal quantity of gas with 0.3" pressure drop etc. With the air completely shut off—only convection air through the apparatus cooled the gas from 211° to 157° with 96° air.

On Table 1 will be seen the performance of the test cooler for 400 lbs., 250 lbs. and 100 lbs. gas. The gas pressure drop was maintained constant for these tests. For the 400 lb. gas the approach between the gas from the coils and the air was 12° for a pressure drop of 0.7". To get a closer approach it is only necessary to increase the air velocity or reduce the gas quantity as just shown for 83,000 cu. ft. per day.

From this data one can get a relative idea of the surface required to do a given cooling job.

Field of Usefulness of Air Cooling

The Barnsdall plant uses the finned coils shown by Fig. 1e to cool the high and intermediate pressure gas. The same finned tubing, which incidentally is ⅝" dia. is good for 1200 lbs. pressure, can be used for gasoline condensing, oil cooling, steam condensing etc. The tubing used at Newhall can be made only in copper and aluminum because the metal must be very ductile to draw. If other metals would be required because of corrosion or high temperatures different types of tubes would have to be used.

Steel tubing could be used very advantageously in high temperature refining operations. In fact they have been but the writer does not know where they have been used with forced air circulation. Tubes with fins are used in oil tube stills and superheaters very effectively.

It is confidently believed that condensing of exhaust steam will be used extensively on drilling rigs and around gasoline plants. To make such equipment pay, a value must be given to the water and also lengthened life for the boilers. Condensers will pay out on this basis. In fact one of the major refining companies is installing an air-steam condenser to condense 5,000 lbs. steam per hour. It was economical to condense the water.

Table 2 gives results on a test condenser. The data is for a radiator type condenser with proper drainage of the steam in the tubes.

Importance of Tube Position to Rate of Steam Condensation

Many people give little thought to the value of position of a tube to its ability to condense steam. In fact some manufacturers place the tubes in a vertical position. This is however not done in steam power plant practice. In that industry they are always placed horizontal. The steam, when condensed on a vertical tube, loads up and gets an increasingly large quantity of water as it flows down the tube. There is no way for it to get off the tube except to flow downward. The result is that for a good portion of the tube you have heat transfer based on water to steam instead of steam to the tube. The rate of heat transfer is much different for the two cases. The water blanket on the tube surface prevents the steam contacting the metal. The transfer rate of condensing steam to metal is several times that of water being cooled by metal.

Figure 4 which is a reproduction of a curve given by Quigg, Moyer & Huntington shows the difference in heat transfer rate. That is the over all rate for a vertical tube, 45°, and horizontal tube.

TABLE NO. 1

TESTS ON COOLING GAS WITH "ALL IN ONE" FINNED TUBE COOLER FOR DIFFERENT AIR VELOCITIES AND GAS PRESSURE COOLER CONSISTS OF 30 ONE FOOT LENGTHS OF FINNED TUBING IN SERIES. THERE ARE 4 ROWS DEEP WITH COILS ON 1½" CENTERS. COILS STAGGERED. FACE OF COOLER 12" x 12".

Run No.	1	2	3	4	5	6	7	8	9	10	11	12
Gas Press. In, Lbs.	400	400	400	400	250	250	250	250	100	100	100	100
Gas Press, Out, Lbs.	385	385	385	385	235	235	235	235	85	85	85	85
Press. Drop, Lbs.	15	15	15	15	15	15	15	15	15	15	15	15
Gas Temp. In, °F.	219	228	222	232	217	206	212	216	167	170	167	169
Gas Temp. Out, °F.	114	106	99	100	93	94	96	108	88	84	82	81
Air In, °F.	86	86	85	88	86	86	85	86	83	82	80	80
Air Out, °F.	127	114	100	102	99	101	104	122	99	91	87	85
Air Press. Drop, "H2O	0.1"	0.3"	0.5"	0.7"	0.7"	0.5"	0.3"	0.1"	0.1"	0.3"	0.5"	0.7"
Cu. Ft. Gas/24 Hrs.	116,287	123,989	123,391	126,210	105,669	105,524	103,944	102,825	62,821	63,047	66,079	63,458
B. T. U./Hr.	15,150	18,750	18,820	20,700	16,250	14,700	15,000	13,780	6,160	6,740	6,960	6,920
M. T. D.	54	54	50	50	40	38	43	49	24	21	21	19
°K	280	347	376	414	406	386	350	281	256	320	325	365

°B.T.U. removed per sq. ft. face area of 4 rows coils per °M.T.D./hour.

TABLE 2

RADIATOR TYPE CONDENSERS
FACE 12" x 12" x 4" DEEP

Run Number	1	2	3	4	5
Air Pressure Drop Across Condenser "H_2O	0.1	0.3	0.5	0.61	0.0
Velocity Air to Radiator, Ft./Min.	525	960	1220	1350	0
Temperature Steam To Radiator, °F.	252	251	261	261	230
Pressure Steam Out Radiator, #/sq. in.	5	5	5	5	5
Steam Condensed Per Hour, Pounds	27.5	39.0	47.5	50.0	4.16
Temperature Air to Radiator, °F.	76	76	76	76	76

The greatest amount of metal is exposed to the steam with the horizontal tube. When the steam is inside the tube there should be a slight slope to the tube, say ¼" in one ft. This gives good drainage and prevents piling up of the water to reduce the surface exposed to steam. Their paper states the relative film rates for condensing steam are 795, 1060 and 1370 for vertical, 45° and horizontal tubes.

Vertical tubes with external fins have a tendency to hot air blanket themselves at low air velocities. The air tends to rise due to heat except when swept away by breezes. Thus we see that unless a steady cross current of air is maintained the tube becomes surrounded with hot air. This can be overcome if we lay the coils flat and of only a couple of rows of tubing deep. The hot air then tends to rise across the fins without being held there by the fins. This is the preferable method of setting the coils where forced air circulation is not used.

Relation of Steam Condensed for Various Numbers of Rows of Finned Tubes

It is well to consider the relation between steam condensed and the number of rows of tubes used in parallel to condense it. Table 3 gives the data for 1 to 6 rows of tubes deep (McQuay data).

TABLE NO. 3

STEAM *CONDENSED IN POUNDS PER HOUR PER SQUARE FOOT OF CONDENSER FACE FOR DIFFERENT NUMBER OF ROWS OF TUBES. AIR TO CONDENSER 90°F AND 500'/MIN. VELOCITY. CONDENSER PRESSURE 5# GAGE.

Rows Tubes	#/Hr. Steam Condensed	Value of Row of Tubes as a % of 1st Row	Temperature of Air from Condenser
1	21.6	100.0	128
2	37.2	71.0	156
3	48.5	52.0	176
4	56.8	38.5	191
5	62.6	27.0	201
6	67.3	21.8	209

It is for air to the coil of 90° and 500'/min. velocity approaching the tube bank and not between the tubes. With a single row of tubes we get 21.6 lb. steam condensed per sq. ft. of face area and the air temperature from the coils is 128°. With 6 rows there is 67.3 lbs. steam condensed and the air temperature is 209°. Thus we have 3 times as much steam condensed but have had to use 6 times as much surface to do it. That is because the air temperature leaving the 6th row has increased to 209° which has changed the mean temperature difference between the air and steam. Another column is given in which the value of each row of tubes is given as a function of the first row. The value of the first row, when used alone is assumed to be 100%. Let it be understood that the values given for each row is a percentage of steam it condenses in relation to the first row.

Steam Condensed as a Function of Air Velocity

In Table 4 you will see the value of air velocity. The table is for two rows of tubes. With a velocity of 300'/min. approaching the tubes, 26.5 lbs./hr. of steam is condensed. For 1000'/min. 58.6 lbs./hr. is condensed. For 3 1/3 times the velocity a little over double the amount of steam is condensed but the pressure drop across the coils has been increased from .05" water to .42". Thus the pressure drop has been increased over 8 times.

No attempt to evaluate number of rows of tubes, air velocities or horse power will be made. It must be done for each job. It depends upon first cost of coils, motive power and value of electricity for motor drive, gas fuel for gas engine drive or steam if turbine is used.

TABLE NO. 4

STEAM *CONDENSED IN POUNDS PER HOUR PER SQUARE FOOT OF FACE AREA OF CONDENSER FOR DIFFERENT AIR VELOCITIES. AIR 90°F. CONDENSER HAS 2 ROWS OF TUBING DEEP. STEAM PRESSURE 5# GAGE.

Air Velocity Ft/Min.	Steam Condensed #/Hr.	Temperature Air from Condenser	Pressure Drop Across Coils
300	26.5	168	.05" Water
400	32.2	161	.08
500	37.2	156	.12
600	41.9	152	.16
700	46.4	149	.22
800	50.5	146	.29
1000	58.6	142	.42

*—McQuay Coils.

Pressure Drop Across Finned Tubes

Figure 5 is presented to permit one to evaluate the pressure drop across one row of finned tubes. The tubes are 5/8" dia. with 7-rows per inch of 1 3/8" O.D. fins on 1½" centers. To obtain the pressure drop for any other number of rows of tubes, multiply the value on Fig. 4 by the number of rows. The tubes are on 1½" triangle pitch.

Table 5 is to show the importance of selecting the proper size fan or blower. The curves show the diameter is much more important for low heads than higher ones. However it is essential to make a careful selection of fan or blower for any job because of first cost and operating cost. The table is for both ¼" and 1" water pressure.

Table 5

Dia. fan ft.	Fan H.P. for ¼"	Fan H.P. for 1"	Cu.ft/min air
6	4.5	..	100,000
7	36.2	45	100,000
8	28	40.5	100,000
9	17	40.	100,000
10	11	42.	100,000

Cooling Engine Jacket Water

We have so far considered the problem of cooling gas, condensing steam, etc. Let us now consider another specific case of cooling water. The specific use of the water is engine and compressor jacket cooling. To do this work we use another type of cooling surface. It is the automobile type of radiator. This type of cooling surface is not made to give close approach of the water to the cooling air as is the finned tubing we have been considering. It is, by reason of experience, the best and cheapest type of cooling surface for cooling engine jacket water.

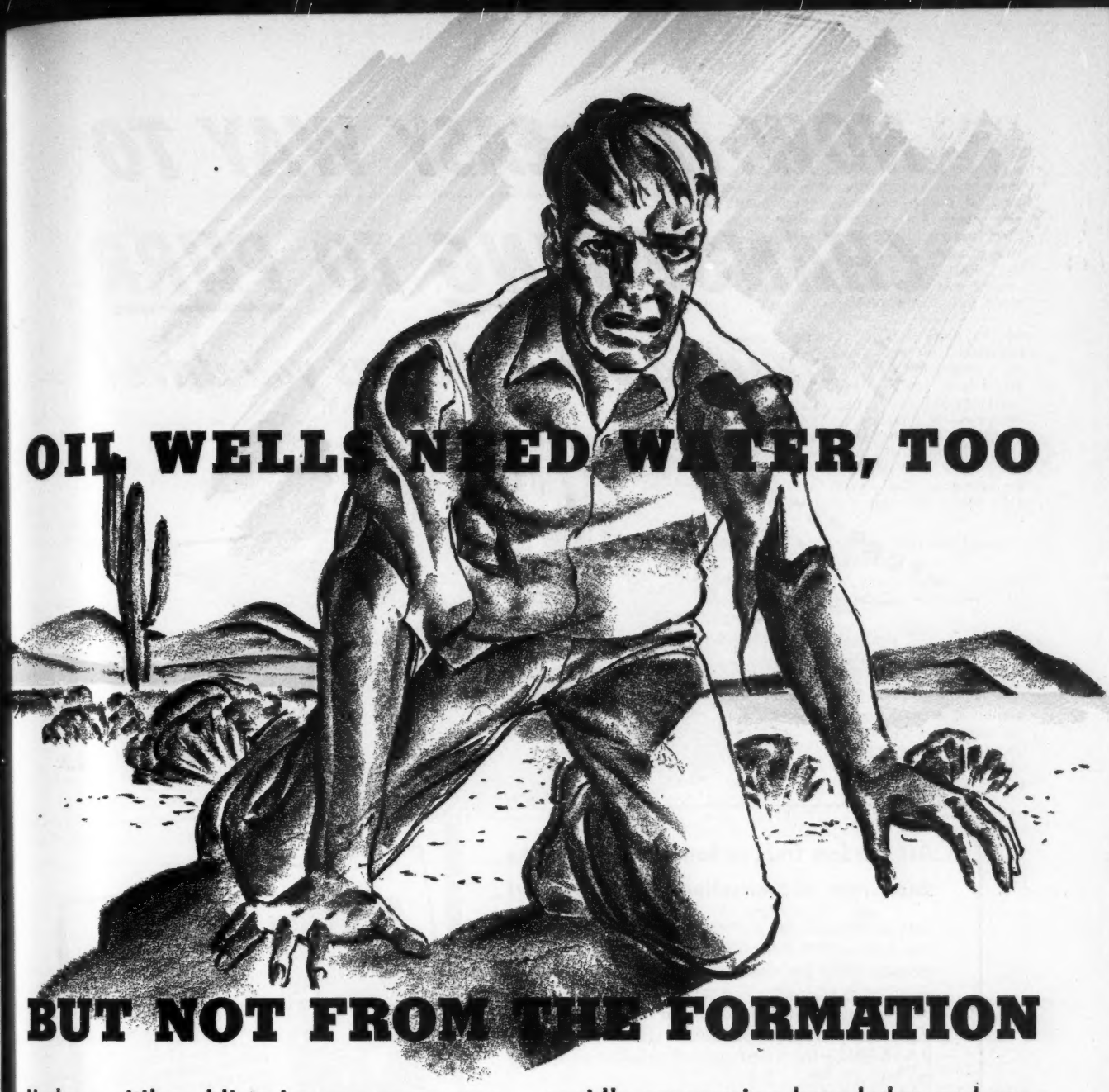
Position of Fan in Cowling

First, let us consider the air mover, that is, the fan forcing the air across the cooling or heating element. We must consider the position of the fan in relation to the cowling between the fan and coil section. This is an important item. So is the problem of pushing or pulling the air across the unit.

Advantage of Pushing Air Over Pulling It With Fan

Tests have shown that in general it is more economical to push air across a radiator than to pull it. In the first place the fan is handling denser air and in the second place it is handling cold air. Even without the advantage of the fan handling cold air over hot, tests show that a given 30"—8 bladed airplane type fan behind a radiator will handle more cold air when blowing it across a radiator than it will sucking it. Air was cold in both cases. We recently ran some tests on one of the Barnsdall radiators for the Newhall plant. The radiator was set up with the fan in its proper position. The fan was connected to a motor which was in turn mounted on the table of a milling machine. The fan could be moved back and forth in relation to the radiator cowling. The air velocity, for different fan positions, was taken in front of the radiator. It was done for both pushing and pulling the air across the radiator. The radiator was not in operation during the tests so the air was cold. It is essential to have the fan well inside the cowling when the air is drawn through the radiator and also very necessary to have the fan outside the cowling when the air is pushed across the radiator. The radiator had a 36" x 36" x 4" core and a 30"—8 blade airplane type fan operated at 1170 RPM. The transition was 6½" deep with a 3½" band 31" dia.

Pulling the air, the best fan position



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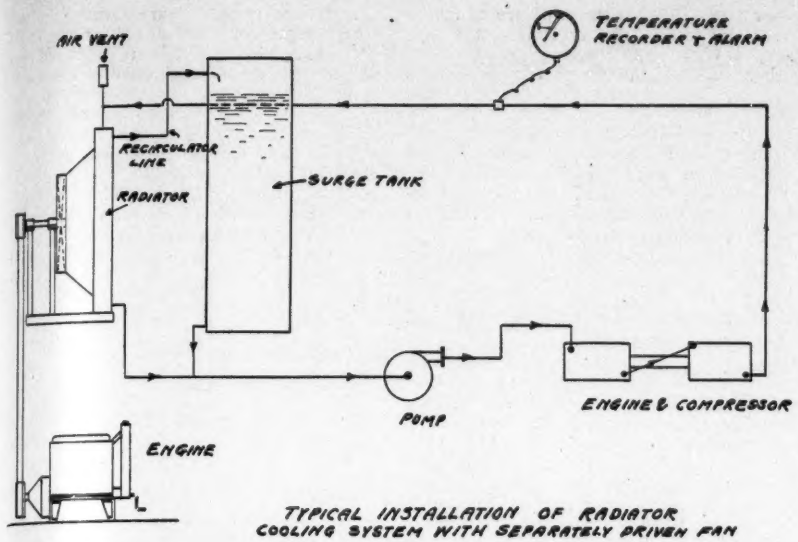


TYPICAL INSTALLATION OF RADIATOR COOLING SYSTEM WITH SEPARATELY DRIVEN FAN

inside the cowling gave an average velocity across the core of 755'/min. and 710 for ⅛" outside the cowling. When pushing the air, the maximum air velocity was 890'/min. with the fan ½" outside the cowling. This quantity decreased for a position nearer or farther from the cowling. The difference between the two maximum velocities is 135'/min. or 18% over the 755 when pulling. It required 3.08 amps. on a 220 volt, 3 phase 60 cycle motor to drive the fan, or about 1 horsepower. No readings were taken to determine the horsepower of the fan for the different positions. We were more interested in air quantities than horsepower. It was also noted that the air distribution across the radiator, particularly at the corners, was better for the air being pushed.

Radiators For Large Gas Engines

If we will look back—not many years—we will recall some sorry conditions relative to engine and compressor cooling. We used to install compressor plants costing any way up to half a million dollars and then use an open cooling system with probably not over one-third of a gallon of dirty cooling water per horsepower.

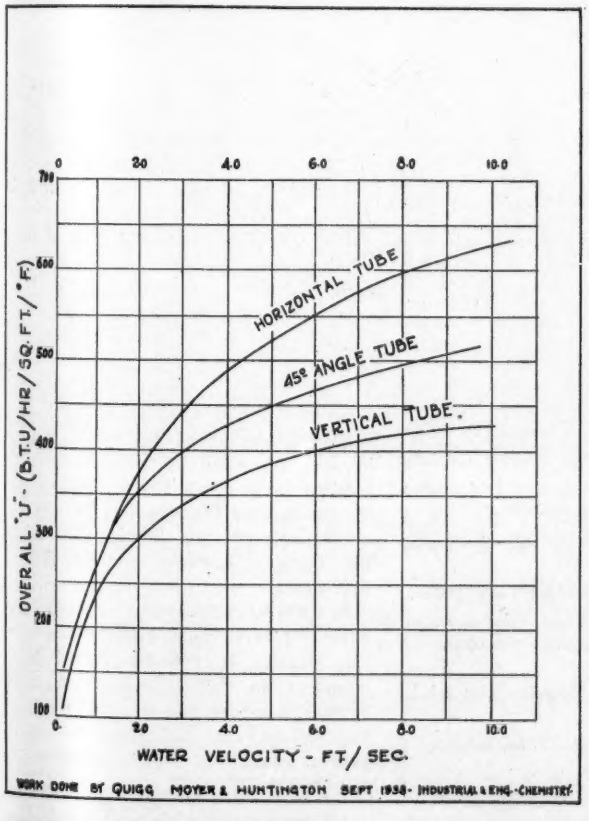
Later when breakage of cylinders and heads became too expensive due to sediment collecting in the heads and cylinders, hot spots etc., we started installing closed cooling systems but in many cases we used distilled water which is very corrosive unless properly inhibited. The condition was decidedly improved with the change but the engines were usually running on 1/3 to ½ gallon water per horsepower. The result was low velocities in the engine jackets with hot spots still possible.

Quite a while ago Mr. Tulin of the Shell Oil Company made the statement to the writer, it was his conviction an engine should have a great deal more water than they get at the present time. In fact he said he believed the temperature rise should be about 6 to 7 degrees through the engine. That seemed a little radical at the time but not now. We agree that the engine will be better off and have a much longer life under such conditions.

Methods of Cooling Engine Jacket Water

Let us again look around at the manner in which other industries cool their engines.

First take the automobile. The radiator was used from the beginning in that it was the only method available. It is still the way to cool the automobile engine. Conditions on an automobile however are much different from a stationary gas engine. An automobile, trucks excepted, is usually going at a high speed when developing maximum power. Therefore a large part of the air is obtained from the forward speed of the car and not from the fan alone. This permits a small radiator. On a truck the


OVERALL "U" - (B.T.U./HR./SQ. FT./°F.)
WATER VELOCITY - FT./SEC.
HORIZONTAL TUBE
45° ANGLE TUBE
VERTICAL TUBE.
WORK DONE BY QUIGG MOYER & HUNTINGTON SEPT 1938 - INDUSTRIAL & ENG. CHEMISTRY

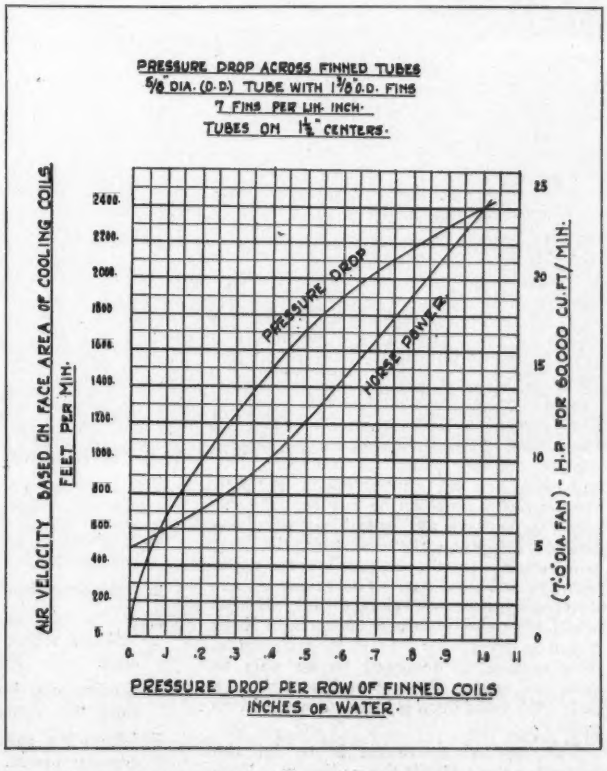

PRESSURE DROP ACROSS FINNED TUBES
5/8" DIA. (O.D.) TUBE WITH 1 3/8" O.D. FINS
7 FINS PER LIN. INCH.
TUBES ON 1½" CENTERS.
AIR VELOCITY BASED ON FACE AREA OF COOLING COILS FEET PER MIN.
PRESSURE DROP
H.P.
(7'-0" DIA. FAN) - H.P. FOR 60000 CU.FT./MIN.
PRESSURE DROP PER ROW OF FINNED COILS INCHES OF WATER.

Figure 5 above, Figure 4, left.

reverse is true. The maximum power is produced on grades and consequently the cooling must be done by drawing the air through the radiator with the fan. This is costly on engine power to operate the fan. In fact as much as 10% of the engine output may be consumed with the fan, and even more. It all depends upon fan design, speed etc.

Air compressors of the portable type use radiators for jacket cooling and also interstage cooling. Airplane engines also use air for direct cooling of the cylinders. If these engines can use air as a cooling medium, why can't air be used to cool the radiator water on large stationary engines?

The subject was discussed with various engine manufacturers and it was decided nothing was wrong with the idea if it was properly applied. The first consideration was to reduce the temperature rise on the water to about 7° to 9° in order to be assured of ample velocity in the jackets to eliminate the possibility of hot spots. This was considered advisable because it was felt necessary to have a much higher jacket water temperature with radiator cooling. It appears that 40° difference between air to and water leaving the radiator is an economical minimum. Then if the air temperature is 110° the water leaving the radiator would be about 150 and the water to the radiator about 158°. This means the circulation of at least one gallon of water per H.P., much more than previously considered necessary. Many engine manufacturers have said "Give me a half gallon and I can't kick."

Everything considered; first cost, operation, salvage value, etc., made it seem advisable to do the cooling on the Cooper-Bessemer engine at Newhall by means of radiators. To do this work three individual radiators were installed. Each fan is 30" dia. and driven by a 1 H.P. motor. This job was satisfactory from the standpoint of first cost and operation. The water in the system, to prevent rusting of the pipes and cylinder jackets, is inhibited. This point should be given more consideration in compressor plants. All water should be inhibited if raw or distilled is used.

Later when it was decided to move 6 of the same Cooper-Bessemer engines to Rosecrans, it was debated whether a cooling tower should be moved from Elwood or install radiators. The economics dictated the use of radiators. The Rosecrans plant has been operating since July, 1939.

The cooling system consists of 12 radiators. They are in 3 units of 4 radiators each. Each unit has a 6' fan capable of moving 68,000 cu.ft. air/minute. The radiators are all connected in parallel. Any radiator unit can be cut out of service. To remove any possibility of vibration or strain on the radiators, the pipe connections to the radiators are made through rubber hose. The radiators are designed for an air velocity of 1,000' min. when all three fans are operating. Each 6' fan is driven by a 15 H.P. gas engine. The system is designed to be able to cool the water from the 6 engines on only two units during a shut down of one unit.

The normal operation is to let the water go through all the radiators. During the cooler weather only one fan is operated. The others can have canvases over the fans, however it is not necessary. With one fan running and the other two off, the water temperature is only 2° lower with the non operating fans covered with canvas. Each fan has 14 blades. The blades prevent very much back flow of air through them. They also have a large flat disc in the center. The normal fan speed is 340 RPM to deliver the 68,000 cu.ft. air/minute against ½" differential pressure.

The second fan is run during hot weather. A bypass is manually operated around the radiators to give additional control over one or two fans operating.

Two fans handled 4 engines during the recent hot spell when the air temperatures went as high as 115° to the radiators. The system was designed for 90°. The chart showed that the water from the radiators did not exceed 142° with 114° air to the radiators. This is with two fans operating. When one fan was cut off the air temperature was down to 95° and the water from the radiators was only 144° (with one fan).

The large installations which we have made have been with separate fan drives. However this is not necessary. The radiators can be mounted above the engine and have the fan driven from the flywheel. This is for either horizontal or angle unit. The Universal Consolidated is installing 2-100 HP Clark engines with radiators above the engine with ducts to discharge the hot air out the top of the building. Richfield has also installed a test unit on one of their single cylinder engines on pumping wells. If the jobs are properly engineered they can not fail to give satisfactory performance.

One must decide whether it is desirable to use a reasonably large radiator and large fan with low fan horsepower or consume more horsepower with a smaller radiator and higher air velocity.

The following are approximate fan horsepower for different size engines with radiators we believe to be the desired size. A 100 H.P. engine will require about 2 fan H.P. for ½" pressure drop across the radiator and a 200 H.P. unit will take 4 fan H.P. In other words about 2% of the engine power is required for the fan. This is only true with an efficient type fan. It is not true of automobile fans. We try to have an air speed of about 1,000 ft./min. to the radiator.

Figure 11 shows the possible methods of direct mounting radiators over angle and horizontal type engines. If preferred, the ducts can be extended through the side of the building instead of through the roof.

Value of Radiators For Engine Cooling

The radiator is a value in a compressor plant for the following reasons:

1. It gives a closed cooling system at the lowest first cost.
2. Salvage value is essentially 100%.
3. No water make up except pump leakage which means low operating cost.
4. Scaling can be eliminated by inhibiting the water.
5. Life of a radiator is as long as a cooling tower.
6. Piping is reduced to a minimum.
7. If the radiators are located in the compressor building, the air can be changed every few minutes to reduce the possible hazard of explosive mixtures and the building can be warmed by recirculating air during cold spells.

It is hoped this paper will promote thought in the oil industry to the advantage of using air as a cooling medium. In the past, cooling has been done almost exclusively by means of water, but since the heat must eventually be dissipated to the air, why not use the air as the cooling medium in the first place?

Heart Attack Fatal To George Maloney

The many friends of George J. Maloney of Long Beach, Calif., will regret to learn of his sudden passing on Oct. 10, due to a heart attack.

Mr. Maloney was well known to oil men throughout the petroleum industry, having for a number of years been associated with Paul Cavins of The Cavins Co. of Long Beach; and previously in an executive capacity, with other members of his family, with the Maloney Tank Manufacturing Co., of Tulsa, Okla.

Death Takes Shell Executive

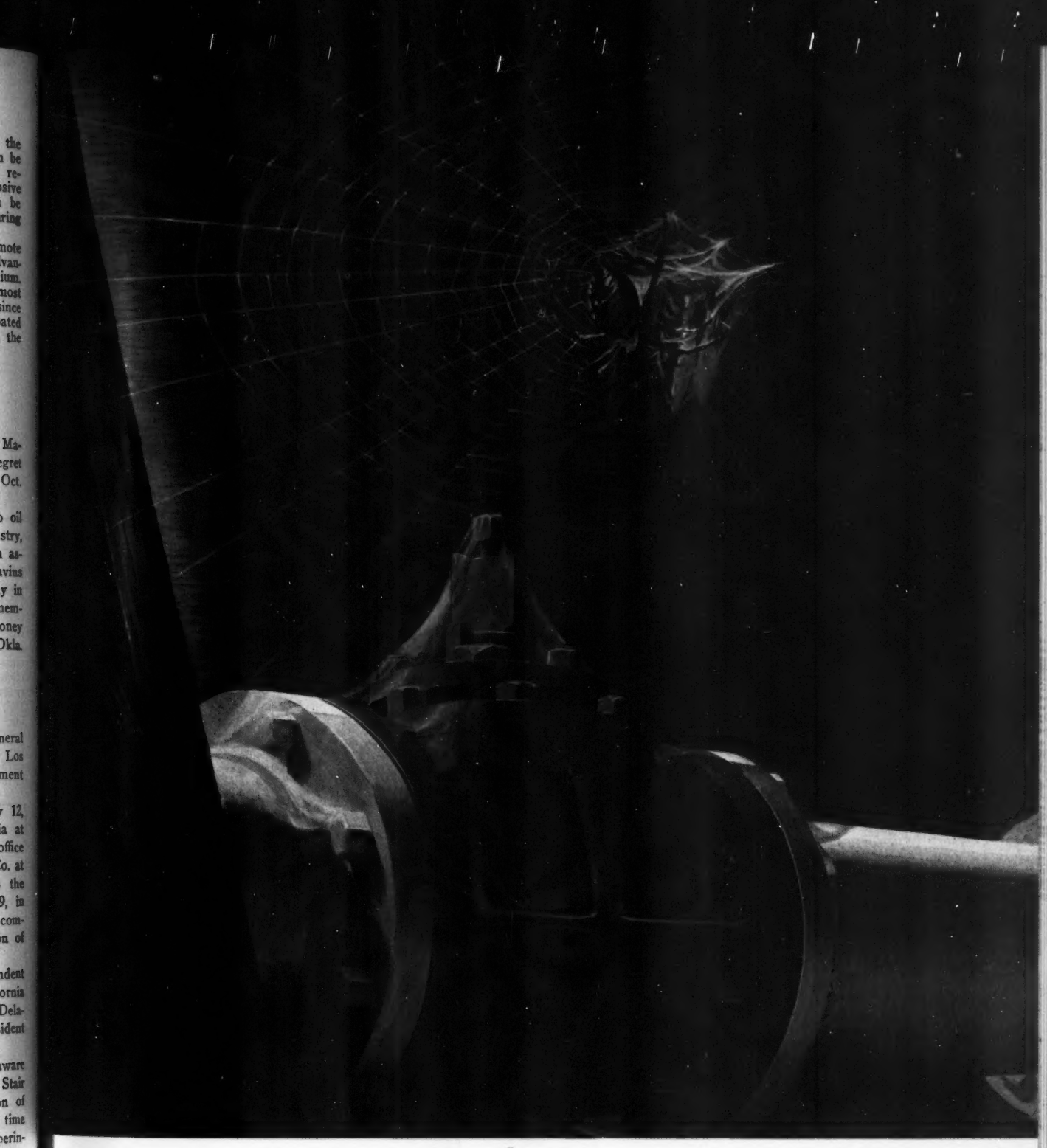
J. U. Stair, vice-president in general charge of Shell Oil Co. activities in Los Angeles, died Oct. 22 of a heart ailment in St. Lukes Hospital, Pasadena.

Born at Mazomanie, Wis., May 12, 1883, Mr. Stair came to California at 20 and found his first work as office boy with the Western Union Oil Co. at Santa Maria. He worked up to the position of superintendent in 1909, in which capacity he served until his company was taken over by the Union of Delaware interests in 1918.

In 1919 he was made superintendent of the various companies in California composing the group of Union of Delaware and later was made vice-president in charge of production.

At the time the Union of Delaware was absorbed by Shell in 1922, Mr. Stair continued in charge of the Union of Delaware group until 1923, at which time he was appointed by Shell as superintendent of its Long Beach division during the heavy drilling campaign and early development of the Signal Hill, Santa Fe, Torrance-Redondo and Dominguez Hill fields.

In 1924 Mr. Stair was appointed assistant general field superintendent in Los Angeles, in 1926 general field superintendent, in 1928 production manager, in 1931 vice-president in charge of production, and in 1938 vice-president in general charge of Shell's operations in Los Angeles.



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Lewis E. Spear

Veteran Coast Wire Rope Maker

The material in the towering testing machine breaks suddenly with an ear splitting explosion. Another piece of wire rope has marked the limits of ten centuries of development, and the operators are too accustomed to the phenomenon to marvel at the resistance of a few slender metal strands to forces which would have leveled the strongest steel derrick to the ground. It's old stuff now. The tester makes the routine notations and another shipment of wire rope is approved for specified uses in oil fields, building elevators, construction projects, lumber camps, ship chandlers' stores and in many other industries.

As we know it today, wire rope, the helicoid or twisted strands, is probably less than 100 years old. The oldest piece of wire rope, described at Kensington Museum as of 800 B. C. manufactured at Nineveh, is merely a bundle of wires bound together, the selvagee type of rope. According to Percy R. Clark, of the Societatea Anonima Anglia, Ploesti, Rumania, in a paper presented before the Rumanian branch of the Institute of Petroleum Technoligists in 1930, ropes of the helicoidal type appeared for the first time in modern history between 1832 and 1837.

In 1840, says Mr. Clark, a Mr. Newall of Dundee took out a patent for the first wire rope making machine.

The history of the wire that goes into the making of the modern helicoid or wire rope is related by Kenneth B. Lewis, of Morgan Construction Co., Worcester, Mass., as follows:

"It is generally conceded by a few historians that pre-Christian wire was not drawn through dies. Such wire as has survived has been carefully examined and shows some traces of the manufacturing process. Some of it was sheared from plates and rounded by tapping with a hammer. Some was sheared from thin sheets and twisted; some was made by rolling up a scroll of thin sheet, pointing it down and pulling it through tapering holes in order to roll the scroll tight. In no case is there evidence of elongation by cold work, nor does such wire appear in lengths exceeding a few inches.

"When long wires were required, short pieces were brazed or soldered together. The earliest known reference to the wire drawing die in literature is in a Latin manuscript of about 1000 A.D. The writer, Theophilus, mentions dies as a part of the equipment of the usual metal working shop and describes them as being two or three fingers wide, rather thin and pierced with two or three rows of tapering holes . . . The wire drawer sits in a swinging seat and has a pair of tongs linked to his belt. He swings forward, grips the point of the metal to be drawn, puts his feet up on the die and pushes himself away from it, getting about a foot of wire at a time. This same process is repeated with frequent annealings until the wire is small enough to go on to a spool which can be turned by hand.

"In 1650 a startling discovery was made and later recorded. It seems that while iron wire was being successfully drawn to fine gauges and was being extensively used for wool cards, fish hooks and similar purposes, high carbon steel could not be reduced through a die . . . A wire drawer in Altena, disgusted after one of his unsuccessful efforts to draw steel, threw his steel out the window and it landed behind the privy. A few days later he picked it up and tried again. It had been lying in a damp spot and it had taken on a brownish surface deposit, in other words, a sull coat. This he did not polish off and to his great surprise the steel went very nicely through the die. The art of drawing high carbon steel had been discovered. About 1750 it was discovered that dilute sour beer would produce a sull coat, and an-

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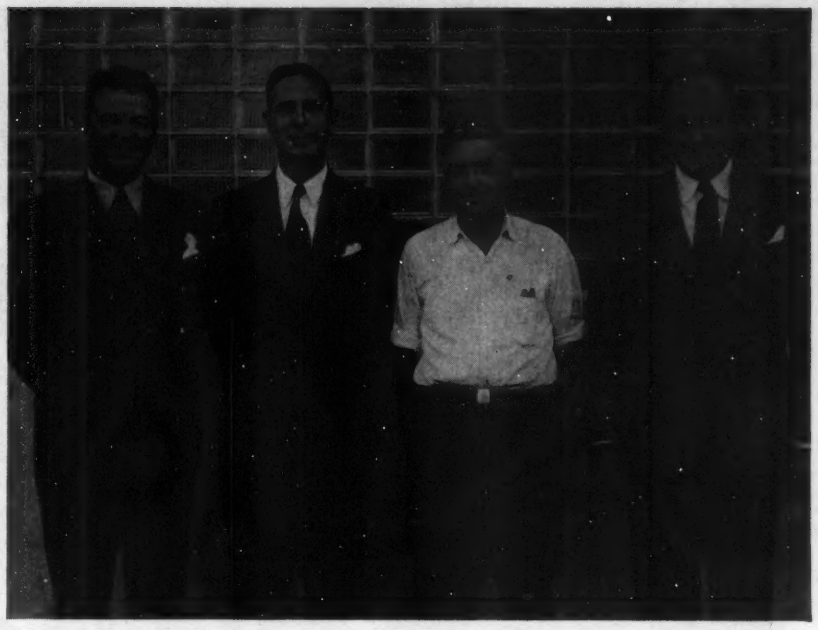
other hundred years later, it was discovered that water would do it . . . No other coating than the sull coat is mentioned in the records except for a suggestion by Rinmann in 1750 that the wire will draw better if soaked in lime water".

The modern phase of development included improvement in dies, in lubricating the wire drawn, in removing scale, and in the production of rods for the dies. The construction of wire cable underwent many changes, paradoxially, from complexity to simplicity, to the development in 1924 of today's "pre-formed" wire rope.

On the Pacific Coast, the manufacture of wire rope had its beginning in 1874, coincident with the invention by Mr. Halladie of the first street railway cable used as motive power to negotiate the steep hills of San Francisco. To make the cable for these cable cars he set up the first wire rope factory, in what was then known as the California Wire Works.

Joining the company at that time as a machinist, was E. J. Bowen, who later became plant superintendent with Charles Leaver as his assistant.

In 1904 the Pacific Steel & Wire Company was formed in San Francisco with Lewis E. Spear as president, and in this organization at that time were E. J. Bowen and Charles Leaver. The company was subsequently sold in 1909 to the American Steel & Wire Company. Shortly after the sale, Mr. Spear and Mr. Bowen left for Los Angeles and formed the present Pacific Wire Rope Company bringing with them Charles Leaver and Vic Luchetti, Thus the personnel of the present company actually had its inception with the old California Wire Works in San Francisco in 1874.



Left to right: Emerson W. Spear, vice president; Ed Fisher, in charge of operation in the Mid-Continent; Vic Luchetti, plant foreman who started to work for Pacific Wire Rope Co. in 1909, and Al Spear, secretary and well known in the oil fields of the West, pose for their "official" 30th Anniversary pictures at the plant in Los Angeles.

Late in October of 1909 the California Oil World published the following news item:

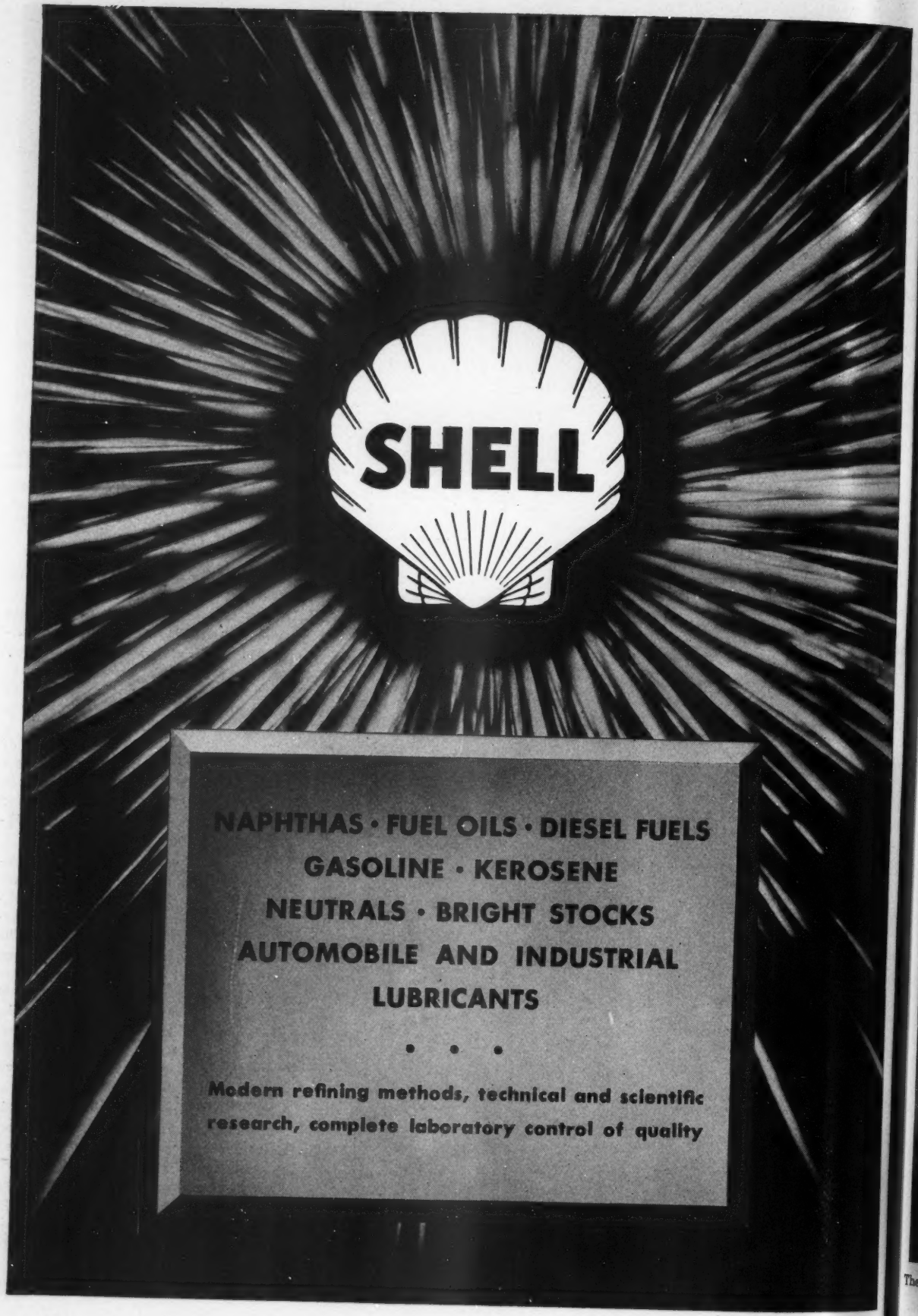
"In a secluded section of Los Angeles at Fifteenth and Alameda Streets, surrounded by a high board fence, a factory has been established which promises to become a great factor in the business of the oil fields. The concern is known as the Pacific Wire Rope Co., and it is already engaged in the manufacture of the wire ropes which are used in the drilling of oil wells entering a field in opposition to big steel to contest for a share of a business amounting to $500,000 yearly.

"Lewis E. Spear, president and general manager was the organizer of the Pacific Steel and Wire Company, a $5,000,000 concern, with an immense factory on the water front in Oakland. The Pacific recently was sold and Mr. Spear, being without engagements and not fancying a life of idleness, cast about for another opening. He was joined by E. J. Bowen, who built the Oakland plant, and the two, together with E. E. Hulet of Los Angeles, organized the new company, ...

"With the record of the old Pacific company behind it, it is safe to assume that the concern, which now (1909) has a modest capitalization of $25,000, will soon become one of the big manufacturing companies of Los Angeles, and that with its superior location, close to the oil fields, it will be able to do its share of the business . . . . "

This month at the same location on

Emerson W. Spear, vice president, Pacific Wire Rope Co., awards Victor Luchetti his "Thirty Years Continuous Service" diamond pin, while, left to right, Frank Battola, Ed La Forte and Fred Hutchinson, hold their respective service award pins, none of which is for less than 25 years of continuous service. The occasion marked Pacific Wire Rope's celebration of their 30 years in business.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• • •
Modern refining methods, technical and scientific
research, complete laboratory control of quality

East 15th Street, Los Angeles, the Pacific Wire Rope Co. offers convincing proof, in its celebration of its 30th anniversary, that Lewis E. Spear, E. J. Bowen, Victor Luchetti, and Charles Leaver knew the wire rope business—and "had what it took" to establish themselves in a strongly contested field. As this is written, a multiplicity of slender wire ropes and lines are moving a gigantic spinning machine into place at the Pacific plant. Looking nothing like the older rope spinning equipment, this machine will soon produce wire rope which will take stresses in excess of a million pounds and will adhere to a production schedule unheard of before in the days when perfection meant sacrifice of speed in making wire rope. Today, wire rope is manufactured at the rate of some 6,000 feet an hour, compared to early figures of approximately 1300 feet per hour, and the modern rope is a superior product.

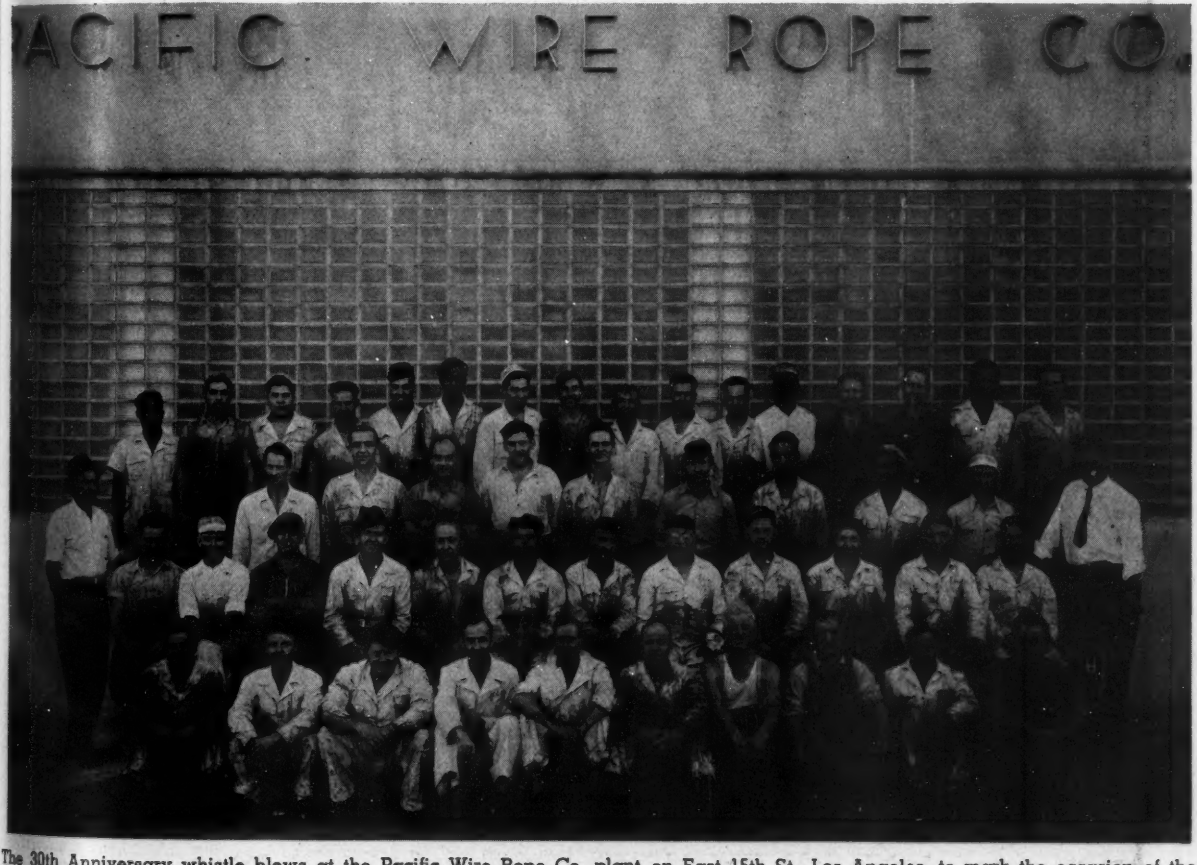
California, Texas and Oklahoma oil men will be interested in learning more of the men who have made a real success of wire rope making. Lewis E. Spear, president, was born in Thomaston, Maine. As a child he came around the Horn with his father, settling in San Francisco. In 1907 he entered the wire rope business and, as recounted in the California Oil World issue of October, 1909, he moved to Los Angeles and founded the Pacific Wire Rope Company with E. J. Bowen. At that time all of the wire rope used in the oil fields of California was supplied by only three companies. At present the number of wire rope companies interested in the area number sixteen.

E. J. Bowen, who turned down many tempting offers to leave Pacific Wire Rope Company in the early days, was Vice-President of the company and continued in such capacity until the day of his death in an airplane crash at Oceanside in 1930.

Edward H. Fisher joined the company in 1916 as bookkeeper and is at present sales manager of its Mid-Continent operations. Emerson Spear, vice-president since the death of Mr. Bowen, is a graduate of the University of California and Massachusetts Institute of Technology. Victor Luchetti, plant foreman, has been with the company since 1909 and is one of four men still active since the plant was started. Albion W. Spear, secretary, was born in Alameda, as was his brother, Emerson, and was in the war class at the University of California serving overseas with the 89th Division. He entered the firm in 1933 having previously held responsible positions with Abbott Robinson Company, Union Tool Company and the Wilson Spear Company.

Some of Pacific Wire Rope Company's sales engineers who are well known in the West include: Walter Coleman and Melvin Stabin, Portland; Spud Lamb, Bakersfield; Allen Johnson, Los Angeles; Ed. Fisher and R. O. Salley at the Houston, Texas office; and Ted Cook and Art Meyer, general sales, in Los Angeles.

That the "Spears," and their product, are as well known in the building of the Golden West as in its oil fields, is attested by the fact that "Pacific" and its famous "blue reel" is well represented in such great projects as Boulder Dam, Bonneville Dam, San Gabriel Dam, Grand Coulee Dam, Hansen Dam, the All-American Canal, the Metropolitan Aqueduct. From its great steel spinners come thread-like tiny, woven wires; and, too, huge spun slings that look down from great heights, while man toils below, ever building the country which Lewis E. Spear visualized when he first setlted his new plant, "way out in the country," in the 1800 block of East Fifteenth Street, Los Angeles.



The 30th Anniversary whistle blows at the Pacific Wire Rope Co. plant on East 15th St., Los Angeles, to mark the occasion of the celebration this month of thirty years in the same location.

Announce C. N. G. A. Fall Meeting Program

A. I. M. E. Fall Meeting Camera Shots

With a paper titled "Advances in Analytical Fractionation Technique" highlighting the morning session and "Alkylation" as the featured subject of the afternoon, plans for accommodating a record-smashing attendance at the California Natural Gasoline Association's 14th Annual Fall All-Day Meeting have been completed according to the joint announcement of P. S. Magruder, president, W. C. Dayhuff, program chairman and Harry Fiske, chairman of the entertainment committee.

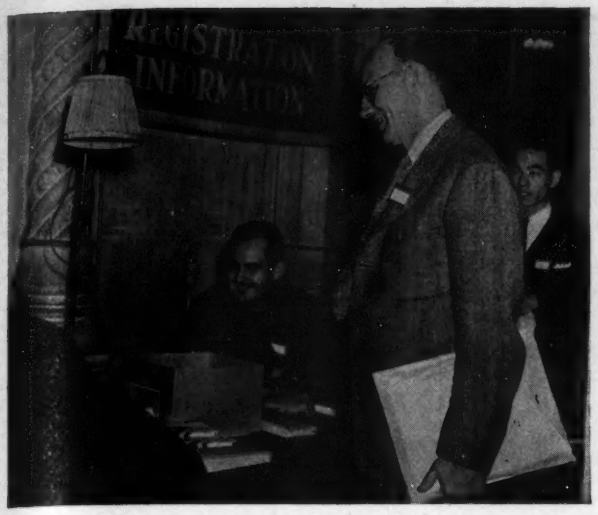
Scheduled to be held in the auditorium of the Ambassador Hotel, Los Angeles, Nov. 17, the program consists of ten star-studded events beginning with the "President's Address" as the first event of the day and continuing on through the evening session which features the association's annual banquet and stag show.

In commenting on the event, President Magruder particularly emphasized the point that the entire event is open to all interested parties. On behalf of the entire membership, he issued a cordial invitation to all men engaged in the Petroleum and Natural Gasoline industries to attend. No admission is charged for any of the day events. The only event on the program for which admission will be charged is the banquet in the evening tickets for which are priced at $3.50 each.

In what is said to be one of the strongest, most informative and interesting morning sessions ever included in the all-day affair Mr. Magruder will open the event with "The President's Address" which, rather than being merely a word of welcome to those attending, will recount the advances the industry has made and summarize the economic condition of the industry as a whole. This will be followed by "The Report of the Technical Committee," with W. W. Rob-

(Continued on Page 29)

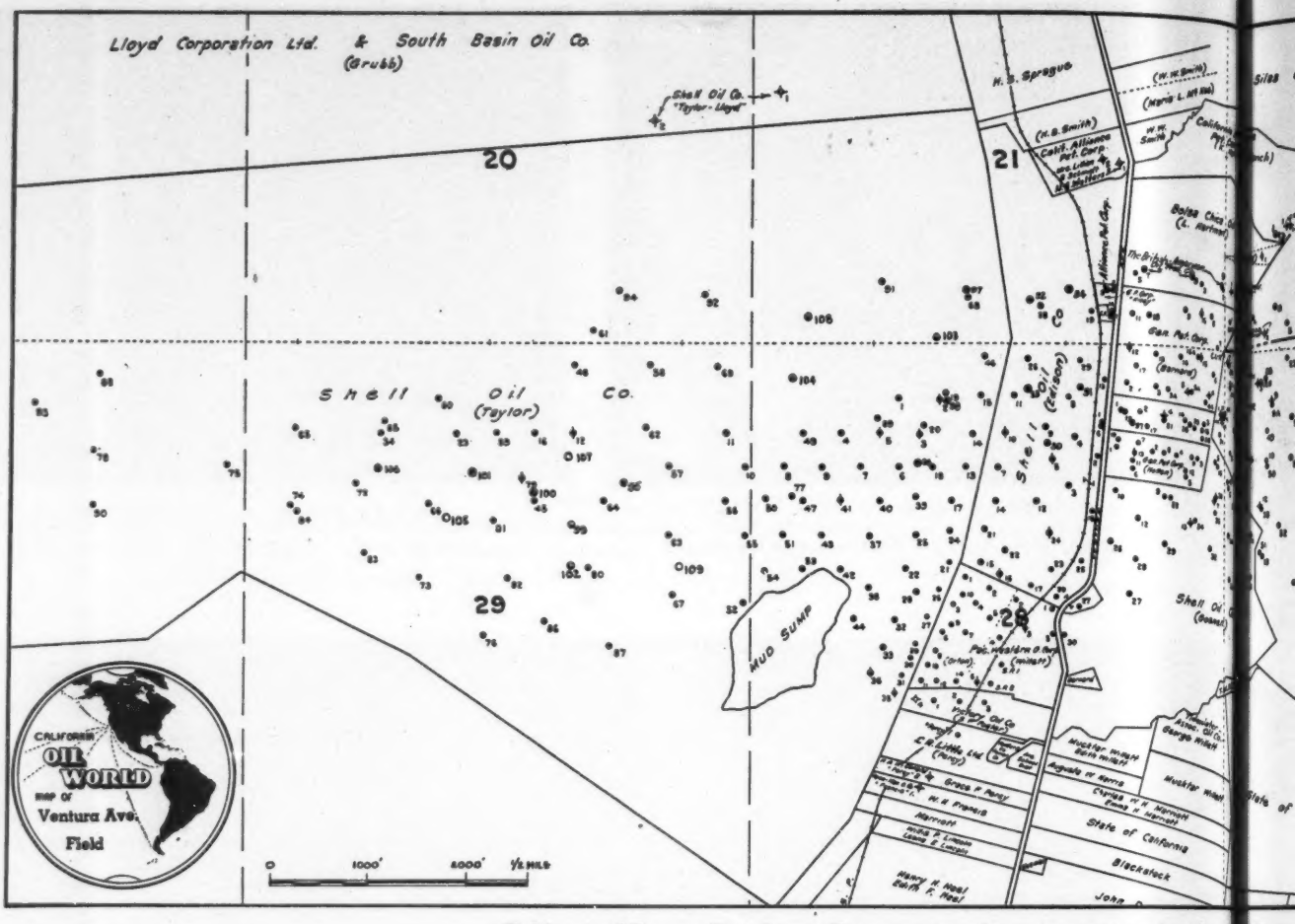
The A. I. M. E. Audience—



Texaco's V. H. Wilhelm registers at the A. I. M. E.'s Petroleum desk. Vic is the man who tells all about California's petroleum position in the A.I.M.E.'s Petroleum Division Annual.

Capt. R. E. Swarthout, chairman of arrangements for the Fall and other Los Angeles A.I.M.E. meetings, steps out from behind the desk, left picture, into the crowd.

Heard Many Fine Papers.



California-Alliance Petroleum Corp. went a long way toward widening long, on the north flank. Called Hartman Ranch No. 1, the discovery well be see comes section

Ventura Avenue Field is Widened

By California-Alliance Discovery

By Ed. R. Millett, Jr.
Consulting Pet. Engineer

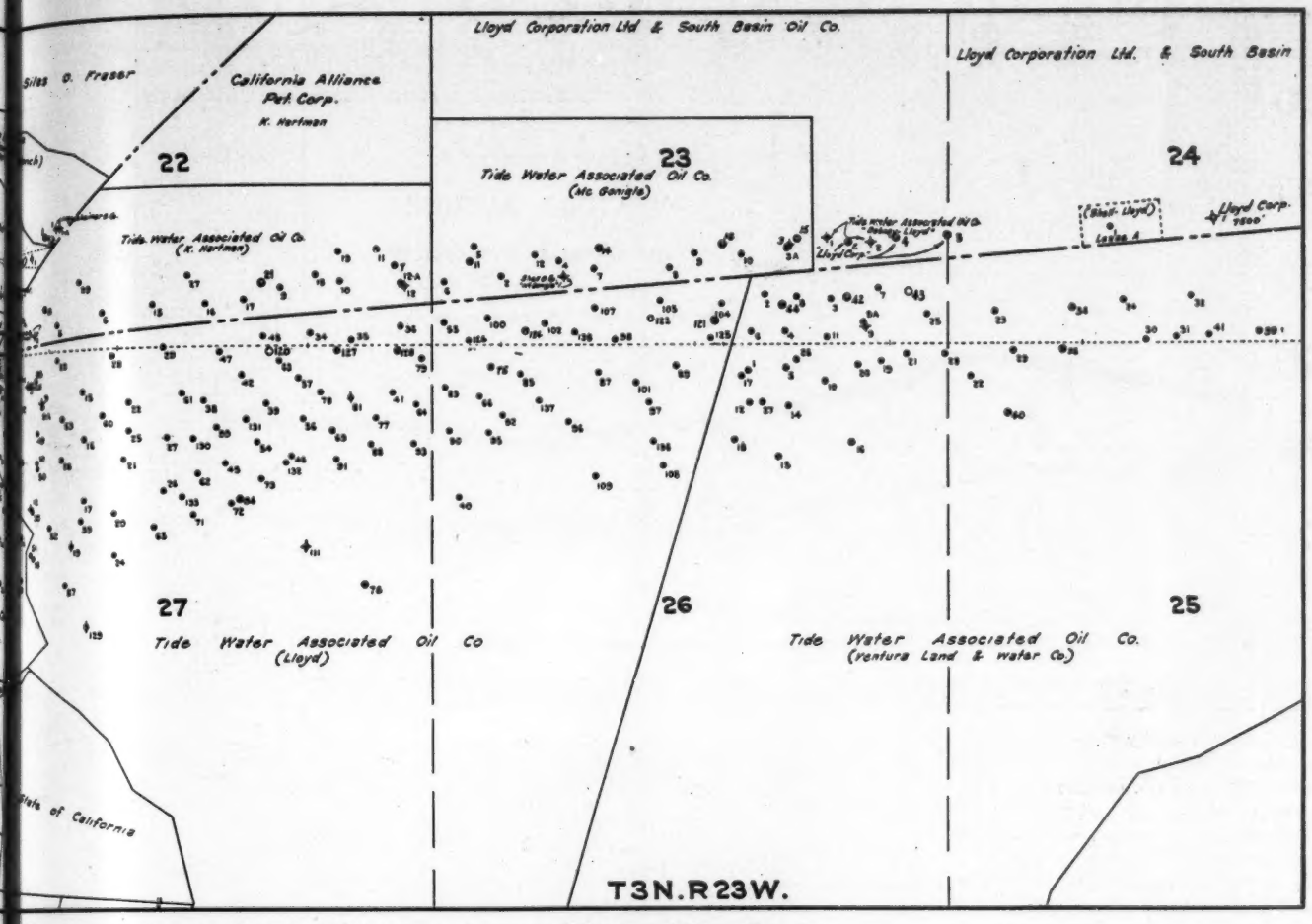
Ventura, like all great oil fields, has its story, and like them it is a story of the faith of a few men. In the early days a great area of grazing land just north of the town of Ventura became the property of the Lloyd family, and a few years later a small incident turned the tide of fortune and gave start to a train of circumstances of which the final outcome is yet to be seen. Young Ralph B. Lloyd listened to the tale of an old oil prospector and in his mind clung the belief that under his fathers land lay a great fortune in oil.

Upon R. B. Lloyd's graduation from the University of California, he put into action his faith and worked untiringly to interest capital for the purpose of proving the territory.

In 1912-1913 activity was started by the Lloyd-Dabney-Miley interests to drill and prove the area. Some gas was encountered but not in commercial quantities. Some three years later the State Consolidated Oil Co. drilled Lloyd No. 2 to a depth of 2253 ft. This well blew out, destroying the rig and equipment, forming a crater around the hole. During September, 1916, this well produced approximately 150 barrels daily. Later, in an attempt to shut off water the well started to flow at the rate of 1600 barrels daily. This flow continued until the completion of Barnard No. 1, drilled by General Petroleum Corporation, some 900 feet to the north in April, 1918.

Early production came from a depth of 1700-1900 ft. sub sea in the Fernando. In May, 1918, the Shell Oil Co. discovered oil below the Gosnell shale in Gosnell No. 1 at a depth of approximately 3000 ft. This zone had a penetration of some 670 feet. Below this interval a zone of considerable thickness was found to be productive and was referred to as the Lloyd zone. In July, 1932, the Associated Oil Co. completed Lloyd No. 93 at a depth of 9710 ft. with an initial production of 5000 barrels per day. Thus, has developed other zones and production in Ventura until today this field is recognized as one of the greatest in California with its productive depths and area still undetermined.

Ventura is a long narrow anticline with its axis assuming almost a true east-west direction. At present its productive



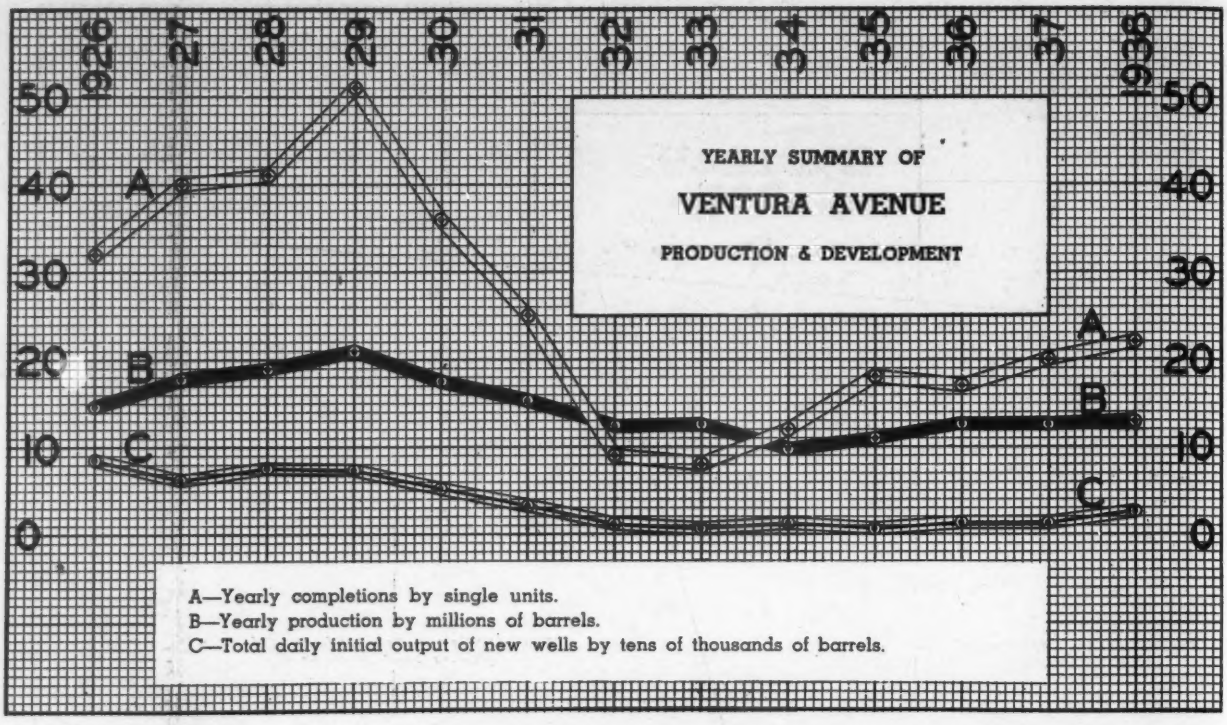
long, narrow Ventura Avenue field when it discovered the new "Hisey Zone" be seen approximately 1000 feet north and 1000 feet east of the southwest section 22.

limits, while not fully developed, extend over twenty-six thousand feet in length and more than a mile in width. Recently the Lloyd Corp. completed Well No. 2 on the north flank near the easterly nose which is nearly 1200 ft. lower structurally than those wells producing on the top of the structure flowing clean oil and showing that the water table in that zone is below that point structurally. At the present time the California-Alliance Peroleum Corp. Hartman Ranch No. 1 is testing a zone on the north flank which is a depth of 6774 ft., sub sea, and has not been produced from heretofore.

With new methods of procedure, and particularly the advent of electrical logging the structural geology of this field is offering a very interesting problem. The effect of faulting on the producing horizons determines setting points and penetration to be taken in the various sections of the field. The Barnard Thrust presents an interesting study in that it apparently dips sharply on the south flank and flattens considerably on the north flank, striking almost east and west. North flank control is inadequate due to the lack of development, and therefore it is impossible to point out the actual structural conditions existing, but thus far the theory of geological predictions is proving out as in Hartman Ranch No. 1. The interval between the two faults and immediately below the Barnard Thrust will prove to be the determining factor of development on the north flank.

Ed. R. Millett, Jr.

Drilling problems in Ventura are those encountered in deep hole drilling in other fields in California. The outstanding problem at present in Ventura is that of establishment of a casing program. Recently, there was an experimental area established by the Commissioners of the Ventura Avenue field, at the request of the Shell Oil Co. in which a one string program would be tested as to whether or not it would be considered good drilling and completion practice. The question is, will one string of casing cemented on the "57 Zone" (approximately 7700 ft. on top of structure) with the annular space above the cement filled with good mud adequately protect the producing horizon above? The answer seems to be in the determination of the characteristics



of mud and the ability of mud to prevent filtration of water between sands and zones. Shell Oil Co. experts have made an exhaustive study of mud problems and believe that this program will give adequate protection and effect a huge economy in the drilling of wells in the Ventura Field. It has been pointed out that this practice is followed in some fields in Texas, Louisiana and foreign countries with success.

In August, 1939, all wells in Ventura produced 1,100,279 barrels which was 137,295 barrels over the allotment set by the Proration Committee. For October, the potential has been set for the 363 producing wells at 91,714 barrels daily and an allotment for the month of 904,-380 barrels. Drilling activity has increased with 20 wells drilling and nine new projects starting.

Ventura Avenue is potentially one of the foremost fields in California inasmuch as the production thus far has been only from the Pliocene, the Miocene not having yet been reached. Future mechanical improvements in drilling may open up other deeper zones causing drilling operations to continue on a large scale for many years. The California-Alliance Hartman Ranch No. 1 if completed, will open the north flank where there has been little drilling in the past and add materially to the productive limits of the field.

Cementing on Kern Oil's West Montebello test.

Compared point by point with other kinds of power, electricity is the undisputed pumping champion of the oil field. The figures show that in the long run electric motors cost less to operate—their overall operating economy is superior to all other forms of power; they give longer trouble-free service—repairs are few and far between; and they're ready to go anytime and all the time.

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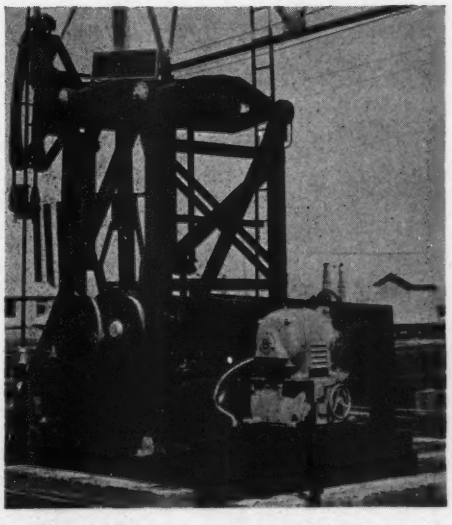

Another Huntington Beach operator selects electric power for pumping. Lacy Bull Dog Unit operated by 7½ horsepower U. S. Varidrive motor.

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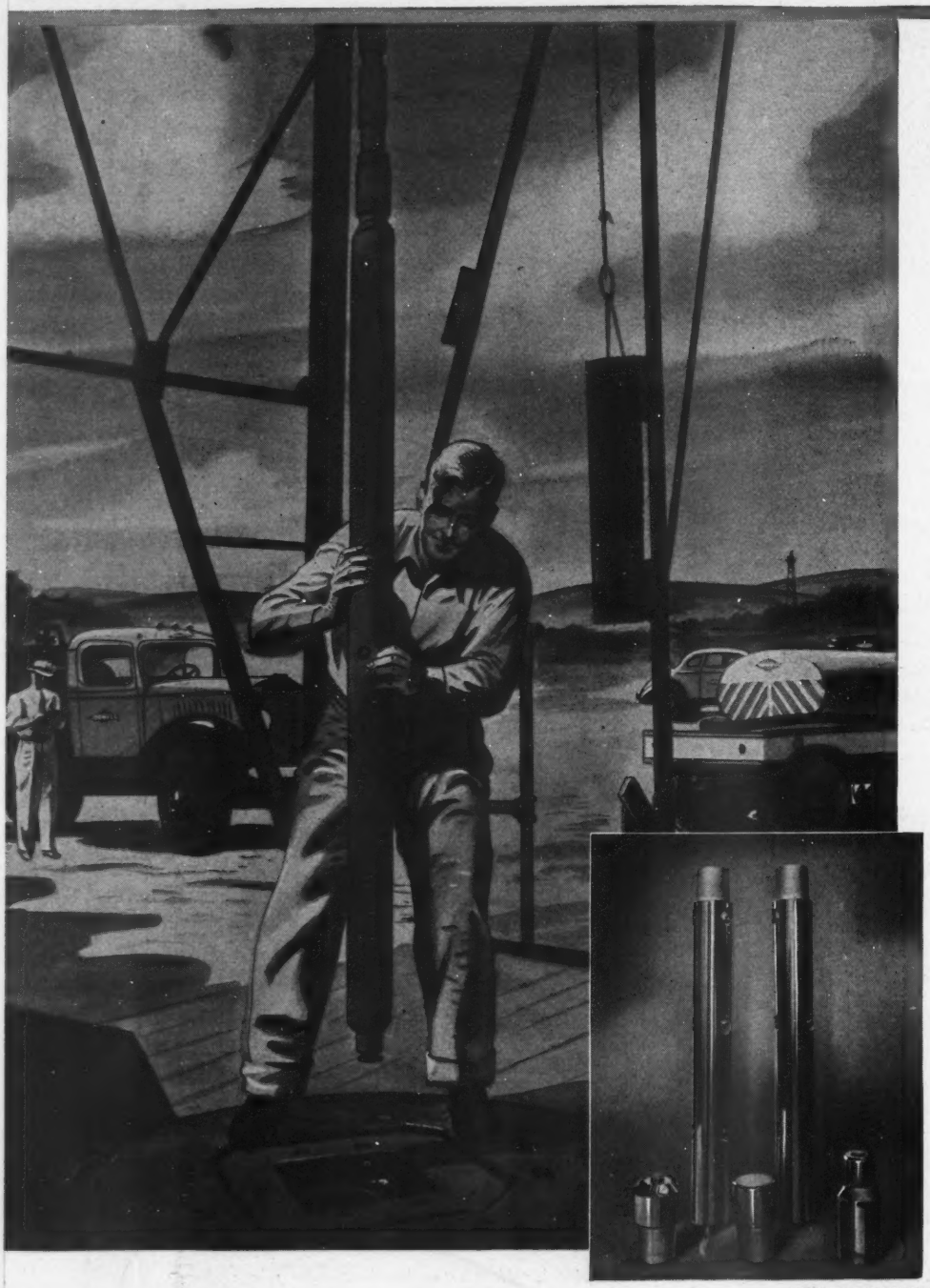

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Difficult problems confronting the industry will be solved by the Acid Jet Gun. This new tool is indispensable for (1) treating tight wells; (2) better control over acid; (3) cleaning out cavings from wells; (4) removing cement sheaths; (5) drilling out cement plugs; (6) deepening wells bottomed in limestone; (7) removing mud sheaths; (8) cleaning gyp from face of pay, screens and liners; (9) removing paraffin from face of pay; (10) perforating DOWMETAL pipe.

Dowell treating stations and sales offices are located in all principal oil producing areas. Operators interested in overcoming natural barriers to profitable production are invited to discuss their problems with Dowell engineers. Producers in ever-increasing numbers "look to Dowell" and get results.

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E. DeGolyer, past national president of the A.I.M.E., is a noted consultant of Dallas, Texas.

(Continued from Page 22)

inson, Jr., chairman of the committee, on the platform. Mr. Robinson will present a report on the accomplishments of this highly important committee which, through the years, has raised the association's prestige to a point of international recognition as a source of authorative information and data. He will be immediately followed by J. S. Gallagher, chairman of the association's Liquefied Gas Standards Committee who will present a resumé of the new bulletin titled "C.N.G.A. Liquefied Gas Standards," which this committee has completed after many months of investigation, research and committee conferences.

The first of the day's papers will be "Advances in Analytical Fractionation Technique," by Dr. W. J. Podbielniak, consulting engineer of Chicago. The natural gasoline industry owes Dr. Podbielniak complete recognition for having been one of the first to construct the instrument for low temperature fractionation. Recognized as an outstanding authority on gas analysis, Dr. Podielnaik has contributed much in analytical research and development in connection with both low and high temperature fractional analysis in the refining industry. In his presentation he will undoubtedly refer to many pieces of supplementary apparatus and explain the fully automatic recording instrument for low temperature fractional analysis which he has termed his "robot."

"Natural Gas Conservation and Utilization in California" is the subject of the final morning paper. This will be delivered by Roy M. Bauer of the Southern California Gas Company. In this paper, Mr. Bauer poses such problems as "What is the present day status of gas conservation? What are the possibilities of underground storage? What

Active at the Fall Meeting of the American Institute of Mining and Metallurgical Engineers, Petroleum Division, in Los Angeles, October 19-20, were, left to right: Richard H. Pence, program chairman, who is a petroleum engineer in the Oil Umpire's office; E. J. Kennedy, Jr., A.I.M.E. assistant to the secretary; Chester Naramore, Petroleum Division secretary; A. B. Parsons, secretary of the A. I. M. E.; W. H. Geis, national chairman of the A.I.M.E. Petroleum Division, who is with Union Oil Co., and Donald B. Gillies, national president of the A.I.M.E., who is vice president of Republic Steel Co.

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Carlton Beal, chairman of the A.I.M.E. Coastal District.

are the reasons for variations in requirements, particularly of gas companies, between the different seasons?" Mr. Bauer will answer these questions as well as many others equally pertinent and important in this timely paper.

Following Mr. Bauer's paper, the meeting will be adjourned for luncheon and called to order again promptly at 2:00 p.m. for the afternoon session.

The feature paper of the day, "Alkylation," comes from the combined pens of E. W. Gard, A. L. Blount and Dr. K. Korpi, all of the Union Oil Company of California. The history and development of the petroleum industry is punctuated by certain developments and contributions which amount to historical landmarks. One such landmark is Alkylation. From the days of the first Burton still have come cracking, vapor-phase cracking, reforming, solvent dewaxing, solvent refining and hydrogenation. In the past four years, inventive ingenuity has shifted to waste refinery gases with attention focused on the fact that they are chemically active. This has resulted in catalytic and thermal polymerization followed by selective catalytic polymerization to produce the synthesis of Iso-octane.

The reason Iso-octane is commercially important is chiefly due to the advancement in the aeronautic industry which has made available airplane engines of huge horsepower operating at compression ratios so high that only fuel with 95 to 100 octane number will perform properly. This advance is strikingly illustrated by comparison of the 9-cylinder Wright engine which powered Lindbergh's "City of St. Louis," rated at 220 H.P. with the latest Wright developing 1100 H.P.

Alkylation then is of interest to the natural gasoline industry because Iso-butane is reacted with Iso-butylene obtained in the refinery. Naturally the natural gasoline manufacturer is interested in what the over-all effect the use of one of these hydrocarbons will have. This paper will explain to us what Iso-octane is, the different methods of its preparation and to what use the finished product is put in building up premium aviation fuel.

"The Role of Natural Gasoline Plant Products in Motor Fuels of the Future" is the subject of the second afternoon paper. This will be given by C. C. Moore of the Union Oil Co. of California. The economic existence of the natural gasoline industry depends in no small measure upon the continued and increasing use of natural gasoline as a blending stock by refiners. What will be the influence of cracked distillates or polymerized gasolines as substitutes? Has Iso-octane the value of Iso-pentane? What are the limitations and advantages of these fractions? The answers to these questions will have a very definite bearing on motor fuels of the future and consequently on the prosperity of our industry. Mr. Moore's paper will supply the answers.

Dr. Podbielniak returns to the platform for the second time during the day with "The Centrifugal Super-Contactor" as his subject. He will stress the fact that a small unit occupying no more space than a 5 H.P. motor has the fractionating efficiency of a 100-plate column and that units of any size and capacity can be operated to suit almost any fractionating column. One of Dr. Podbielniak's favorite ideas is that by means of the super-contactor, raw gasoline can be stabilized, eliminating the need for additional stabilizing columns and the added expense of cooling coils and reflux handling equipment.

The technical portion of the meeting will then close with adjournment until 7:00 p.m. for the evening session which has been given over to celebration of the association's annual banquet and fun-fest.

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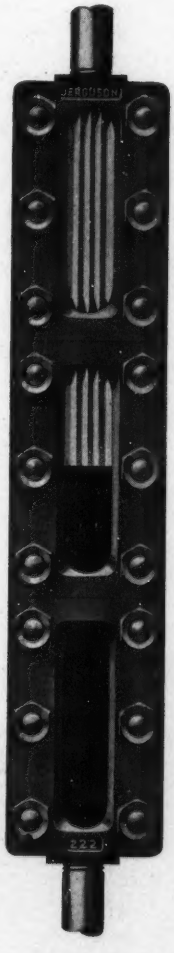

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The football coach was delivering a stirring pep talk just before the start of the game. "Lissen, boys," he shouted, as he crashed his fist on the table, "The team that will win this game is the team that can show initiative, individuality and leadership. Now go in there and do just exactly as I told you."

And when our local boys left recently to play a San Francisco junior college, the town paper announced, "The team left last night on the Sunset Limited accompanied by more than 200 rotters."

Incidentally, **Bill Ackerman** tells us that in the head office of a certain oil company at San Francisco there is posted on the notice boards the following reminder, "All office boys wishing to attend weddings or funerals must notify the manager prior to 10:00 a.m. on the day of the Stanford-California game."

Years ago Bill read about a Stanford man coming out of the game with a charley horse, and ever since has been under the impression that football was an equestrian sport.

Another San Franciscan, **Bill Saul,** describes an efficiency expert as a man who is just smart enough to tell you how to run your business, and altogether too smart to start one of his own.

And adds that the oil business is fundamentally sound—asleep.

In this same connection, **Andy Anderson** defines a business man as one who is never out—of a conference.

Frank Young, on the other hand, is of the opinion that no ethical oil man would ever go back on his word without first consulting a lawyer.

A lawyer being a chap who is willing to spend your last cent to prove that he's right.

And **Al Gore** asks us if we remember the good old days when the neighbors kept dropping in for a call. Now they usually call in for a drop.

One lad, by the way, who is addicted to the odd snifter, says that liquors are sometimes of such poor quality that if they weren't so expensive he wouldn't drink them at all.

We have actually heard of one brand of fire water which has the antidote printed on the label.

O. C. Field, the well known ornithologist, says the reason birds sing is that they don't need to build their homes within easy reach of a delicatessen store.

And **Bill Pemberton,** another birdologist, thinks the condor is the fiercest bird in the United States. That is saying plenty for the condor. There are a lot of mighty fierce birds in this country when income tax time comes around.

The way taxes are being doubled and redoubled, Bill has a suspicion that some bridge player is monkeying with our taxation.

Bridge, of course, as every one knows, is a game in which a good deal depends on a good deal.

Now comes **Johnny Quayle,** the economist, insisting that a budget enables you to tell your money where to go instead of wondering where it went.

Johnny has always contended that we owe it to society and to ourselves to live within our income even if we have to borrow money to do it.

And just as we had despaired of hearing from the golf players, **Ed Leabow** rises to elucidate on the national pastime. According to Ed, golf is a game in which you try to break 80 on the course and 90 on the way home.

One nice thing about golf is that it hardens your muscles, steadies your nerves, and clears your head, so that you can play more golf.

With which we again leave you to your own devices. Remember, making good resolutions is just a futile attempt to interfere with scientific laws.

And as the little boy from the Bronx said, "Science is dem tings dat says 'No Smoking'."

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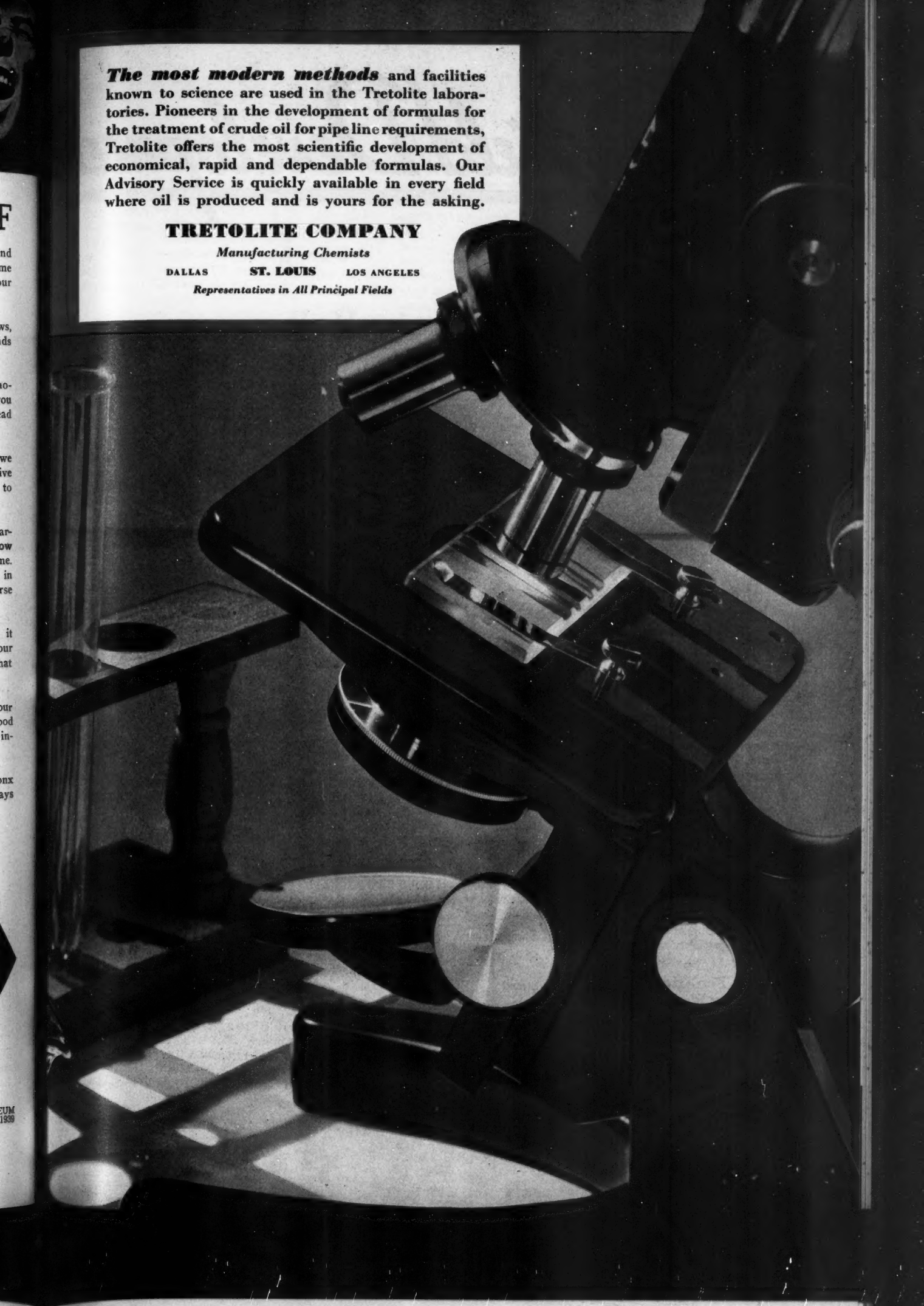

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Field Development

San Joaquin Valley

Greeley Outpost Strikes Vedder

Another major oil discovery was credited to the San Joaquin Valley when General Petroleum Corp.'s Greeley outpost well, Sullivan No. 1, encountered the Vedder oil sands at 11,330 ft., in sec. 12,29-25, a little more than a mile northwest of Greeley production. The well cored the horizon at a relatively high point causing engineers to estimate that approximately 200 ft. of sand will be good before encountering bottom water.

Indicating that the well is a continuation of the Greeley high, the oil sand was found five feet higher than in Standard Oil Co.'s 11-17, nearest Greeley producer. Although the General Petroleum well is near the Rio Bravo Field, possibility of direct connection is discounted by the fact that Rio Bravo producers are considerably lower than in the current strike. Another factor linking the zone to Greeley rather than its Vedder zone counterpart, Rio Bravo, is the fact that Superior Oil Co.'s Helbling No. 1, deep southeasterly test is apparently faulted off the productive structure.

Discovery of the rich Vedder oil sands in the well augers for an increased drilling program in the area northwest of the Greeley field since several operators hold acreage within reasonable drilling distances.

Standard Oil Co.'s KCL No. 12-5, drilling at 10,182 ft. some 2000 ft. southeast of the strike, appears to be well inside the potential producing area.

Eocene Pool Has 11 Drilling Rigs

With eleven drilling rigs at work, the development and extension of this extremely rich field is quietly progressing. Standard Oil Co. and Robert S. Lytle, Operator are extending and developing their large leases in methodical fashion, one location after another. In the north end of the field Superior Oil Co. and The Texas Co. slowly develop their leases northward. At the south end of development Universal Consolidated Oil

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Coalinga	Migs Oil Co.	7	11, 20-14	529	Rigging pump
	Rylatt, Harry E., Kipling	3	26, 20-14	2010	Idle
	Stuart Oil Co.	1	12, 21-14	1410	Bailing
	Wilshire Annex Oil Co.	64-30B	30, 19-16	8372	Fishing
Fresno Area	Seth Turner	1	4, 14-19		Rig
Gatos Creek	Gatos Creek Oil Co.	1	19, 19-13	300	Idle
	Kern County				
Arvin	Morton, Lindley C.	B-F 1	25, 31-29	5044	Drilling
Antelope	Par Petroleum Co.	1	32, 25-17	2997	Drilling
Buena Vista	Gen. Pet. Corp., B.V.A.	1	1, 32-24	10080	Drilling
	Richfield Oil Corp., B.V.A.	81-36	36, 31-25	8193	Drilling
	Shell Oil Co., B.V.A.	45-9	9, 32-25	9350	Drilling
Buttonwillow	Union Oil Co., Bowerbank	4-23	23, 29-24	10270	Drilling
Devil's Den	Herzog, Raymond D.	1	27, 25-18	710	Cleaning out
	The Texas Co., Beer	1	6, 26-19	2471	Drilling
	Trigg, H. C.	1	11, 25-18		Location
	Emigrant Hill Oil Co.	1	24, 25-18	4271	Idle
Edison	O'Rielly, Francis, Edison-Land	2	5, 30-29	4101	Fishing
Fruitvale	Richfield Oil Corp., KCL	83-29	29, 29-27		Rigging up
Grapevine	Richfield Oil Corp.,	KCL 1	28, 11-20	11168	Idle
	The Petrol Corp.,Reserve-Petrol	33-5	33, 11-19	9190	Idle
Greeley	General Pet. Corp., Sullivan	1	12, 29-25	11380	Drilling
	Standard Oil Co., KCL	12-5	7, 29-26	10182	Drilling
Kern Front	Crestmont Oil Co.	C-H 1	22, 28-28	2950	Drilling
Kern River	Sleeper Ridge Oil Co.	1	15, 29-28	1505	Idle
McKittrick	Deal, O. T., Rankin	1	30, 30-22		Rigging up
	Trico Oil & Gas Co., Westeo	2	34, 30-22		Rig
Midway	Baker, Leyse & Sonne	1	20, 32-23	2730	Bailing
Mt. Poso	G. & V. Oils., Ltd.	1A	35, 26-28	810	Drilling
Richgrove	Crusaders Pet. Corp., Quinn	1	9, 25-27	1475	Idle
	Dilamar Oil Corp., Quinn	3	15, 25-27	2902	Idle
San Emigdio	Continental Oil Co.	KCL F-1	5, 10-21	9221	Drilling
	French, Mabel E.	1	14, 10-23	714	Idle
	Shell Oil Co.	KCL 2A 52-13	13, 11-22	11562	Drilling
	Shell Oil Co., Pleito	A-37-25	25, 11-21		Rigging up
Shale Hills	Gamble & Oliver, Abbott	1	7, 27-19	475	Drilling
	The Texas Co., McLennan	1	19, 27-19	1758	Abandoned
Strand	Continental Oil Co.	KCL D-2	14, 30-36	14051	Testing
	Kings County				
Reef Ridge	Chuka Oil Co.	2A	10, 23-16	130	Drilling
Strattford	P. W. Burnham & Assoc., Bartells	1	23, 20-20		Rig
	Tulare County				
Pixley	Compass Oil Co.	1	8, 23-26	1743	Drilling
Trico	Trico Oil & Gas Co., Newland	1	29, 24-23	2512	Shut-in
	Trico Oil & Gas Co., Tulare Farms	1	27, 24-23		Rigging up

Co. has spudded Binkley No. 1 as a southerly outpost with promise of production.

Coalinga N.E. Outpost Bottomed in Gatchell

With development of the proved area proceeding in an orderly fashion, interest in the Coalinga Northeast Field turns to Wilshire Annex Oil Co.'s outpost driller, well No. 64-30B. Located near the center of sec. 30-19-16, a little more than a mile south of production and but two and a half miles north of the Coalinga Eocene Pool's most northerly operators, the well has assumed much importance to those interested in seeing the area of these two rich shoreline deposits finally determined.

Bottomed in the Gatchell oil sand at 8372 ft. after reporting top of the zone at 8366 ft., Wilshire Annex well is 357 ft. lower on structure than Standard Oil Co.'s 73-19B, most southerly of Coalinga northeast field producers. A further check reveals that bottom water as found in the Amerada Pet. Corp.'s SPL No. 26-17, if present at this outlying point, will be found only 39 ft. below the top of the Gatchell. If this be true, the well is probably near the southerly limit of production. Compared to the Coalinga Eocene Pool, the well is 1606 ft. lower structurally than Superior Oil Co.'s Cagle No. 3, most northerly producer.

A test of the 6 ft. of oil sand open in the well yielded a fair, steady blow. While attempting to pull the tester, the packer stuck and the well flowed cushion water for five hours while trying to free the pipe. When last reported, the well was fishing for the formation tester packer and tailpiece.

Mt. View "Cat" Cores Siltstone

Hogan Petroleum Co.'s Mountain View area wildcat, Wible No. 1, was last reported coring siltstone at 5071 ft. Located west of the main body of the field, in sec. 23,30-28, the project is attempting to locate another of the petroleum accumlations trapped by faults for which the area is noted.

Allied Petroleum Corp. is drilling No. 33 near the south quarter corner of sec. 19,30-29 in the proved area of the Mountain View Field. Located in the area where wells are sparse, the try was last reported below 2750 ft.

Lindley C. Morton, drilling Barlow Farms No. 1 on sec. 25,31-29 southeast of the field, is coring in shale below 5000 ft. The current try is the result of an active leasing campaign in the district.

Derrick Erected For Elkhorn Test

Todd Pettigrew & Associates, representing an Eastern Syndicate which has blocked up 19,000 acres in the district after an exhaustive geological survey, have erected a rig in sec. 8,32-22 of San Luis Obispo County. Located on one of six structures covered by the leases, the well may be drilled by a Long Beach operator.

Tide Water Associated Oil Co.'s KCL No. 81, most southeasterly test of the new field, is coring below 10,330 ft. in shale, gray sand and thin streaks of oil sand. Located near the northeast corner of sec. 14,31-25, the Stevens zone was encountered at 9970 ft., some 700 ft. lower than in the discovery well one mile to the northwest. A formation test from the top of the oil sand to 10,120 ft. flowed a 16½ bbl. per hour rate of clean 31 gravity oil through a one inch bean. The flow was killed to prospect the present horizon.

In the main body of the field, nine other drilling projects are in varying stages of progress. With but a few substantial operators developing the rich field, there is little competitive drilling.

Buena Vista "Cats" Drill For Stevens

Three widely spread tests near the bed of Buena Vista Lake are drilling toward the Stevens zone from which Western Gulf Oil Co. recently completed the prolific discovery well of the Paloma field, some three miles east of the nearest driller.

Geographically closest to production is Richfield Oil Corp.'s BVA No. 81-36, now drilling below 8195 ft. in sec. 36,31-25. This well, located at the northwesterly edge of the Buena Vista Gas Field, established a 12,500,000 cu. ft. gas flow from the Etchegoin gas zone near the 5500 ft. level. Failure to discover oil production in the deep zones will at least leave this test in a position to complete as a commercial gasser.

At the south edge of the lake bed, Shell Oil Co.'s BVA No. 45-9 is drilling in hard shale at 9350 ft. The try, located in sec. 9, 32-25, has reported nothing of interest to date.

Deepest of the current wildcats is General Petroleum Corp.'s BVA No. 1, which, located between Elk Hills and the westerly edge of the lake, in sec. 36, 31-25, was last reported at 10,084 ft. in Miocene brown shale.

Among commoner petroleum products are alcohols, glycols, ethers, ketones, acids, resins and rubber substitutes.

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Bailey Pressure Controls
Bonney Weldolets, Threadolets
Burns Pilgrim Liner Hangers
Byron-Jackson Tongs, Tubing Catchers, Elevators
Cameron-Well Heads, Blowout Preventers
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San Emigdio Test Sets Protective String

Continental Oil Co.'s KCL No. F-1, deep driller in the hills south of the Maricopa Highway, is reaming to set an 8⅝ in. protective string near the 8600 ft. mark. Located in sec. 5,10-21, near the east line of the Rancho San Emigdio, bottom was last reported at 9221 ft. in brown shale with streaks of gray sand. Fine sands showing light cuts were reported at 8670 and 8696 ft.

Shell Oil Co., the other deep operator in the area, is at 11,562 ft. in hard shale with KCL No. 2A-52-13. Located in sec. 13,11-22, the hole has protective 9⅝ in. pipe cemented at 10,297 ft. No showings have been reported in this try.

Believing that someday new production will be found in the deep zones of the extreme south valley, Shell is rigging up Pleito No. A-37-25 in sec. 25,11-21 on the San Emigdio plains, three miles west of Richfield Oil Corp.'s KCL No. 1.

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Conoco to Test 2nd Deepest Hole

Continental Oil Co., who hung up a world's record by drilling KCL No. A-2 at Wasco to 15,004 ft., neared it's own record by bottoming KCL No. D-2, Strand outpost, at 14,051 ft. The well is the second deepest drilled hole in California and the third deepest in the world.

Located in the southwest quarter of sec. 14,30-26, two and one half miles northeast of Ten Sections and four miles east of the Strand Area, the try was bottomed in brown shale and gray sand. Sole showings in the hole were stringers of oil sand in the Olcese zone between 11,600 and 11,700 ft. which the company now proposes to test.

Shale Hills Try Abandoned

The Texas Co. abandoned McLennan No. 1 in sec. 19,27-19 of the Shale Hills district, after bottoming at 1758 ft. in Cretaceous gray sand. Two miles to the north, Gamble & Oliver's Abbott No. 1 is drilling in hard shale at 450 ft.

Tassajara Oil Starts Contra Costa Wildcat

One of the most important of northern wildcats is the well now being rigged up by Tassajara Oil Corp. of Oakland in sec. 9,2s-1e. Located by a well known geologist in the northeast quarter of the section, the test tops a structure known as the Tassajara Anticline which is considered to have excellent chances of producing oil as well as gas. A test of a near-by gas seepage is said to have indicated a B.T.U. rating of 1015.

Actual drilling of the well will be done by H. L. Whiston of Bakersfield who has a contract to carry the hole to 6000 ft., a depth sufficient to test the Middle Miocene sands and shales in which production is expected. According to geologist Dr. Bruce L. Clark, between 500 and 1000 ft. of highly organic Miocene shales are exposed in the Black Hills north and west of the well site and near the town of San Ramon.

Proximity of the prospective oil field to the San Francisco Bay region, together with the favorable geology of the area make the Tassajara project the most interesting independent test of northern California since the discovery of the Marysville Buttes gas field by Buttes Oil Fields, Inc. more than two years ago.

Kern Front Test Cores Gray Sand

Cresmont Oil Co.'s Crawford-Hesse No. 1, located in sec. 22,28-28, was abandoned at 2950 ft. in wet gray sand after topping the barren Vedder at 2860 ft. The test lies two and a quarter miles north of the new east edge development of the old Kern River Field.

Compass Drilling Pixley Wildcat

Compass Oil Co. drilling well No. 1 in sec. 8, 23-26 of the Pixley district, reports slight gas showings at 1400 ft. The try, in a relatively well drilled section, was last reported at 1741 ft. in blue sandy shale.

Buttonwillow Test Drills at 10,270 Ft.

Union Oil Co.'s Bowerbank No. 4-23, located in sec. 23,29-24, is drilling at 10,270 ft. in brown shale after redrilling the interval 9000-10,140 ft., a job made necessary by caving hole. The wildcat lies four miles southeast of a 12,989 ft. hole drilled by the California Exploration Co., which found a great deal of oil sand all too tight to afford a reservoir for commercial accumulation.

Reef Ridge Try Spudded By Chuka

Chuka Oil Co. has spudded well No. 2A in sec. 10,23-16 of Kings County. Latest of many drillers in the area, the test lies on a structure some ten miles to the southwest of and paralleling Kettleman Hills. Little hole has been made, the latest reports placing bottom in clay at 125 ft.

Two Drillers At Paloma

Paloma oil field, recently discovered Stevens zone production at the southeast tip of the Buena Vista gas field, has two strings running. Ohio Oil Co.'s KCL No. B-2-43-3 is now drilling below 5000 ft. in it's offset to Western Gulf Oil Co.'s discovery near the center of sec. 3,32-26. Western Gulf has spudded a second well near the east quarter corner of section 3 which will be known as KCL No. A-74-3.

BAROID WELL LOGGING SERVICE

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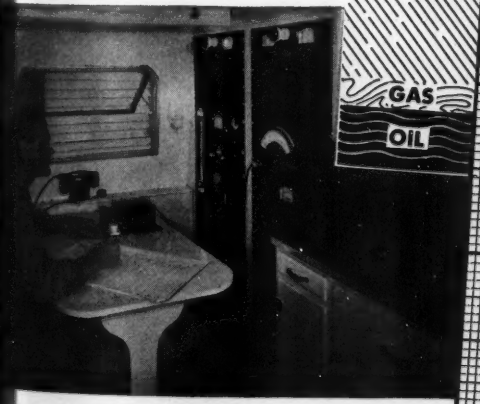
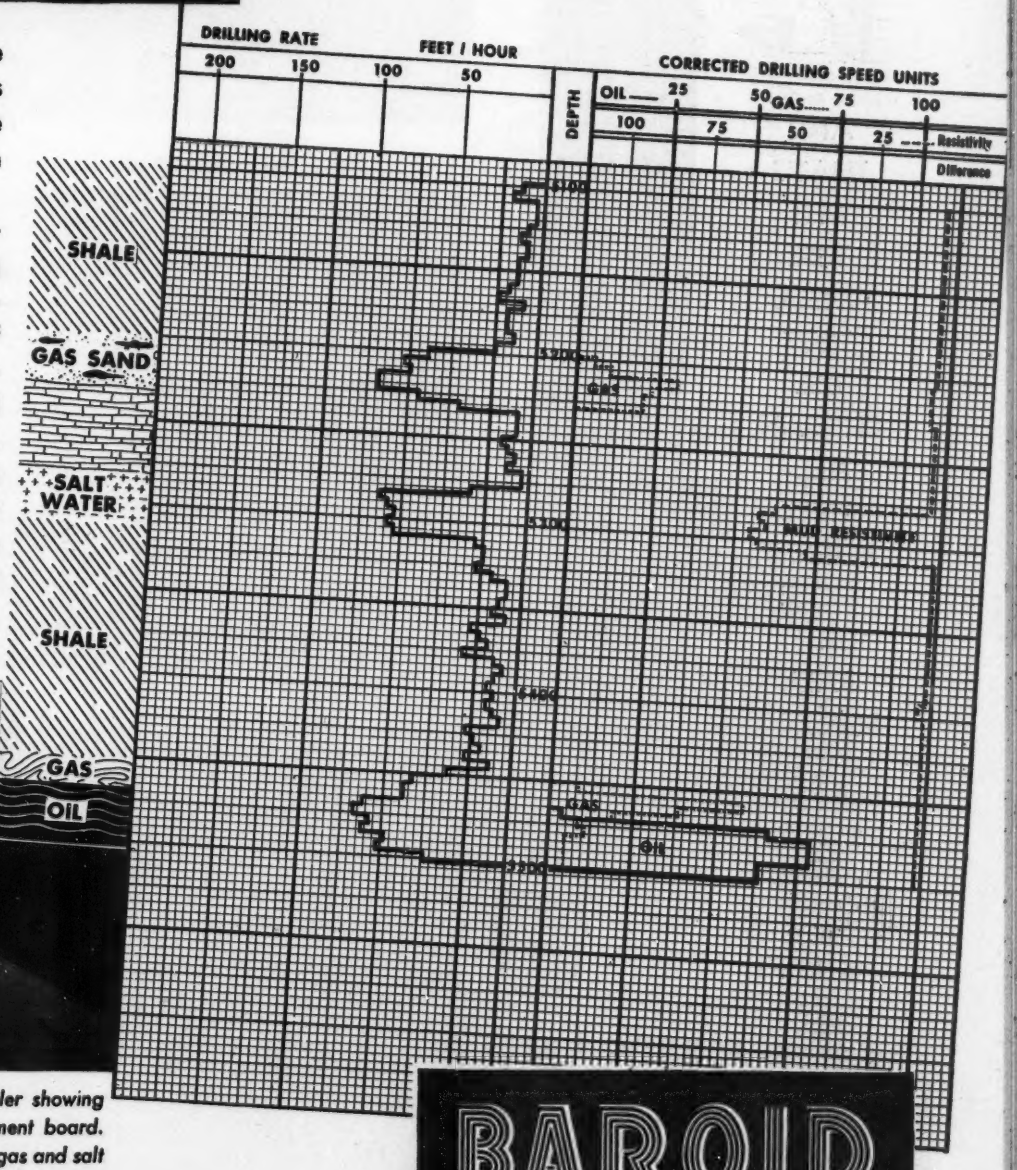
uipment in connection with the roid Well Logging Service is ounted in a trailer which can be sily moved from one location another.

By means of drilling mud an- ysis, the Baroid Well Logging rvice is able to supply opera- s with a log which is a plot of oil, gas, and salt water val- s, bit penetration rate, and rmation data from bit cuttings. This information is obtained ht at the time of drilling and thout interruption of regular lling operations. Illustrated rature furnished on request.



ior view of Baroid Well Logging Trailer showing rator recording data from main instrument board. wn are instruments recording values of gas and salt r, and oil detection apparatus, pump stroke counter meter, and depth meters.



BAROID WELL LOGGING SERVICE

FORMATION INFORMATION THROUGH MUD ANALYSIS

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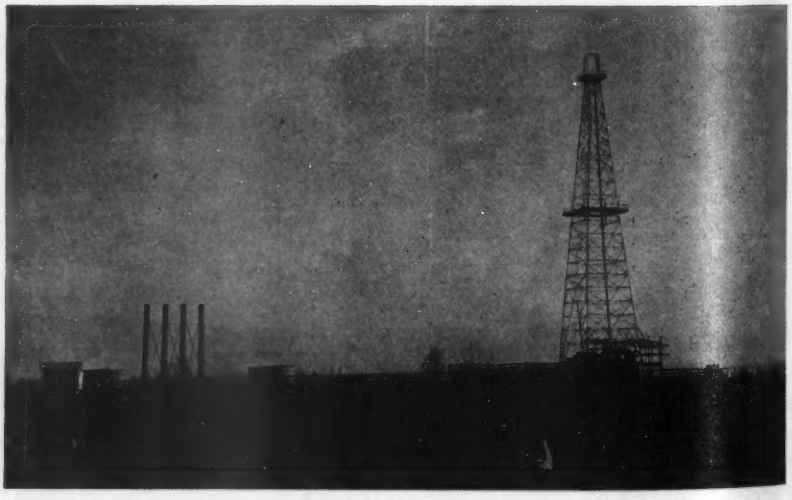

Buena Vista Lake area drilling is far from monotonous. The crews on Richfield's B. V. A. 81-36 witnessed these transformations of their rig site.

Los Angeles Basin

Deep Tests Top Long Beach News

Headlining activity in the Long Beach Signal Hill field is news of the deep tests, now three in number. Deepest, and at present most important, is R. W. Jerman's Dormax Oil Co. No. 1, reported to have found the deep oil sands higher than De Soto's 10,157 ft. well which is open below 9760 ft. The new project located at the corner of 25th St. and Gaviota Ave., cemented 7 in. casing at 9550 ft. after coring streaks of good oil sand to 9660 ft. After testing water shut off on the pipe, the well will be cored ahead to open up as much zone as appears practicable. According to Mr. Jerman, the cores so far have shown a higher percentage of sand than those taken in the De Soto well and the electric log has indicated a higher degree of porosity.

Rapidly increasing in importance is Jack Rogers' El Hondo No. 1 at the corner of American Ave. and Spring St. Located structurally in a similar position to De Soto No. 1, the well is given a good chance of finding the same zone. As some good sand has been found to present depth of 8800 ft., it may not be carried to the 10,000 ft. level but may be finished in the old "deep zone."

Preparations are being completed by Allied Petroleum Corp. for well No. 34 which will be drilled on the west side of Gundry Ave. directly across the street from De Soto No. 1. It is the intention of the company to carry the new hole to the deep zone.

A new shallow well was recently completed on the old Union Pacific right-of-way by Atlantic Oil Co. With 100 ft. of formation open to bottom at 3238 ft., the initial production was estimated at 100 bbls. a day.

Calabasas Test Again Rumored

Again on the street is the story that Calabasas Oil Co. will drill a new well near the old Eason & Smith test on Ventura Blvd. three and a half miles east of Calabasas. Officials of the company decline to state when the project will actually get under way.

Montebello Development Declines Only Slightly

Only a slight decline was noted in the rapid development pace maintained by Montebello for the past several months. Against the figures of two weeks ago, drilling wells dropped four to 37 while wells preparing to spud increased from nine to 12.

Despite dire predictions in some quarters, many engineers now estimate the total recoverable oil in the Eighth zone at 125,000 bbls. per acre, which, unless the present drilling rate is maintained too long, should insure more than a mere payout per well. An average of all the deep zone wells is 200 bbls. a day oil production through a 13/64 in. bean with 1200 lbs. tubing pressure and 1450 lbs. casing pressure. Total gas yield is about 60,000,000 cu. ft. daily against a potential of over 360,000,000 cu. ft.

New impetus was given to the westerly section of the field by the completion of Albertson-Boswell Oil Co.'s Schnackenburg No. 1 with an initial production of 775 bbls. a day through a 1 in. bean. Located in the southeast cor-

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Since then, the Avenal Branch has been active in supplying a major portion of the fishing tool requirements of Kettleman Hills operators, and has helped materially in developing this territory from a bleak and lonely grazing land to one of the largest, richest and most active oil fields in California.

The Avenal Branch is another of Bowen's six Service Stores conveniently located in every active California field. It covers—besides Kettleman Hills—Belridge, Lost Hills, Bradley, Paso Robles, Rio Vista and all the active territory north as far as Stockton and Tracy. In fact, Bowen was the first operator into the Rio Vista, Stockton and Tracy territories with full fishing tool service.

"The Gang" at Bowen's Avenal Branch, ready night and day to serve operators in these fields, includes Dan E. Berry, Store Manager and a "fifteen year man" with Bowen; W. C. Lance, Charley Thompson and "Tex" Francis—all Service Men. They're all experienced in the operation and care of Bowen Tools to assure **you** the best fishing tool service available in California today!

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ner of lot 172, northwest of the Bush Olds well, the project employs 118 ft. of the oil zone to bottom at 7686 ft. and a 90 ft. gas interval below 7440 ft.

Indicating that good production will be found on the northwest flank, J. E. Mabee Co. made two fine tests in Monterey No. 36, formerly a Kern Oil Co. location. A test of the interval 7490-7550 ft. resulted in a strong gas blow with no trace of water, while a trial 7550-7630 ft. resulted in a 35 stand rise of clean oil. The well is being completed with bottom at 7685 ft. and 7 in. casing cemented at 7550 ft. which will be perforated in the gas zone.

Completion of Community No. 1 on the south flank of the structure by Star Petroleum Co. has started a small drilling boom in a localized area around Maple and Harding Streets, one block south of Beverly Blvd. As Star's well is on about the same subsurface contour as the Fullerton wells marking easterly field limits, it is probable no one will venture farther south at this point.

Although speculation as to the possibility of finding a Ninth zone is a favorite conversational topic, the Eighth zone is still sufficiently attractive to stall off a deep test.

Fish—anything lost down a well.

Great Northern Drills Richfield

Reporting extremely slow progress, Great Northern Oil Co. is drilling Oak No. 1 at 1650 ft. at Richfield.

Traders Oil Co. is repairing casing before again attempting to complete its old well at 3650 ft.

Welco Oil Co. is preparing to spud its No. 1 in the Atwood sector.

Basin Oil Completes New Potrero Producer

Transwestern No. 1 is Basin Oil Co.'s newest producer in the Potrero field. Drilled during the first boom years ago, the well was only recently acquired by Basin which plugged the hole to a shallow level and redrilled directionally to tap the sands proved up by other wells. With 90 ft. open to 6335 ft., production is approximately 200 bbls. a day of 44 gravity oil.

Elected to the board of directors of Basin Oil Co. at its last meeting were Neal Anderson and Harry Frankly, both well known local oil men.

Beloil Corp. is maintaining strict silence regarding developments on its Castleberry No. 1. Latest field reports are to the effect that casing cemented on bottom at 5900 ft. is being gun perforated. Although several operators are planning development work in the indefinite future, no other wells are active aside from Basin's Potrero No. 6 which is rigging up.

Brookline Nix Fails In Ford

Failing to find production in the Ford zone, Brookline Oil Co.'s Nix Comm. No. 1, located at the southeast corner of Young and Eubank streets, is plugging back to 3664 ft., its former producing level. Drilled to 5784 ft., the well sought to develop deep production in the northerly Wilmington town lot section.

In the easterly section of the Long Beach harbor area, Continental Corp. is preparing to erect the first of 22 derricks to drill the west bank of the Los Angeles County Flood Control Channel. Actual drilling is scheduled in two or three weeks.

Roy Morgan's stub derrick well at Anaheim and Hayes streets is being swabbed for production after landing a plain slotted liner on plugged bottom at 3350 ft.

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Darling Comm. No. 1 Is Enigma Producer

Somewhat of an enigma to its owners, Barnsdall Oil Co. and Wilshire Oil Co., is Darling Community No. 1, semi-wildcat located half a mile southeast of the Rosecrans field. After a formation test showed the bottom wet at 8957 ft., 7 in. casing was cemented at 8728 ft. and perforated 8680-8700 ft. where a 600 bbl. salt water flow was obtained. The bottom was then plugged to 8675 ft. and casing perforated from 8650 to 8670 ft. and from 8523 to 8600 ft. Tubing was hung at 8570 ft. and the well was swabbed in flowing 500 bbls of fluid a day, 20 % of which was oil. A week after completion, production was 385 bbls. of 31 gravity oil and 375 bbls. of salt water through a 45/64 in. bean with 750,000 cu. ft. of gas. The joint operators are unable to explain the presence of oil and water in the same sand.

Best of the group of wells drilled immediately south of the field and east of Main St. is Southern California Petroleum Corp.'s Slabaugh No. 1 which is flowing 225 bbls. a day of 32 gravity clean oil and 550,000 cu. ft. of gas. The well is producing the interval from the cementing point at 7463 ft. to bottom at 7641 ft.

Within the old proved limits, only two wells are drilling. Universal Consolidated Oil Co. is drilling No. 18 at the north end of the Trust lease, while Union Oil Co.'s Rosecrans No. 35 is below 7000 ft.

Costa Mesa Well Prepares to Spud

Late reports from Costa Mesa indicate that Milton Thompson's wildcat at Wilson and Placentia streets will be spudded by the time this appears in print.

Mayor Bowron O.K.s Athens Deep Test

After several months of municipal red tape, Mayor Fletcher Bowron finally OKed the proposal of Thorley Oil Co. to drill a deep test well on 134th St. west of Figueroa St. in the Athens area. As 30 days are required after the mayor's signature is affixed, drilling may not start until Nov. 17.

According to engineer Chas. Gauthier, Thorley Oil Co. will explore below the 7600 ft. horizon tapped nearly 15 years ago by E. J. Miley's then record breaker, No. 6.

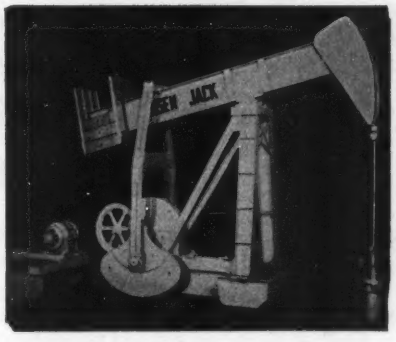
Nothing has been done towards the drilling of a northwesterly outpost by Melrose Petroleum Corp. which a few weeks ago announced a location at 123rd St. and Berendo.

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Athens	Melrose Pet. Co.	1	12, 3-14		Location
Dominguez	R. E. Havenstrite, Operator	1	32, 3-13		Rigging up
Inglewood	Vanguard Oil Co., L.A.I.	1	29, 2-14		Rig
Mint Canyon	Redwood Oil Co., Mitchell	2	22, 4-15	525	Drilling
Newhall	Mangrum and Page, Lintz	1	4, 3-15	352	Idle
	Consolidated Pet. Co., Needham	4	13, 3-16	3635	Drilling
	Tamas Oil Co., Perkins	1	11, 3-16	2284	Drilling
Palos Verdes	Rolling Hills Pet.	1	27, 4-14	6487	Drilling
Potrero Heights	Owen O Oil Co.	1	36, 1-12		Cellar
Puente	Kelso, F. W., Kelso	1	13, 2-10	2380	Idle
	Stabeck & Assoc.	1	14, 2-10		Rig
Sunland	Casa Grande Oil Co.,Lopez-Lundy	1	1, 2-15	2150	Drilling
Towsley Canyon	J. E. O'Donnell	1	8, 3-16	5225	Pumping water
Whittier	C. W. Partridge, Hillside	1	22, 2-11	1780	Idle
	Partridge, C. W., Whittier Crude	14	22, 2-11	1310	Drilling
	Taylor Drlg. & Prod. Co., Gregg	1	17, 2-11	6058	Idle
	Orange County				
Costa Mesa	Thompson, Milton N. Banning	1	9, 6-10		Rigging up
Olive	Morton & Elder	1	17, 4-9	628	Rigging pump
	San Bernardino				
Carbon Canyon	Carbon Canyon Oil Co.	1	30, 2-8	256	Idle
	Hokom, John Oil & Gas Co., Ltd., Hokom	1	31, 2-8	2941	Idle
	San Diego				
Rose Canyon	Waterbury, L., Jay Capitol	1	32, 15-3	1500	Drilling

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Colusa	Empire Oil & Gas Corp., Grandfather Finger Well	1	27, 14-5		Location
	Empire Oil & Gas Corp., Dunlap	1	36, 16-5		Drilling
Humboldt	The Texas Co., Eureka	3	21, 3-1	5067	Shut in
Merced	Seaboard-TWA-Union, Howard	1	6, 8-11	1475	Drilling
Monterey	Priest Valley Pet. Co.	1	20, 20-12	1095	Drilling
Sacramento	The Texas Co., Welsh	1	5, 3-3		Rigging up
San Benito	Consolidated Pet. Co.	1	11, 17-11	1610	Drilling
Santa Clara	Wright, C. W., Beatty	1	27, 8-2		Location
Sutter	Buttes Oilfields, Inc., McPherrin	1	1, 15-1	2800	Drilling
Yolo	Standard Oil Co., Corcoran	1	29, 9-1	3682	Shut-in



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Aliso Canyon Well Cores Pay Horizon

Tide Water Associated Oil Co.'s Fernando No. 11, at 5075 ft., is reported in the coarse, pebbly oil sand productive in the company's wells on the adjoining Porter lease. It will be necessary to make a few feet more of hole and set a water string before the well can be completed.

Tide Water Associated, discoverer of the field a year ago and only operator to obtain production, has one other active project, Porter No. 12, which is drilled at 4300 ft.

Petromont Finishing Second Five Points Well

Petromont Oil Co. is finishing its second well in the tiny Five Points field at Huntington Beach. Located 300 ft. due north of Burton No. 1, the new well will complete in the 4400 ft. zone, productive in all the other wells in this restricted area.

The W. D. Owen well, now being drilled by Sara Orr, is nearing the 4000 ft. level and should follow Petromont on production.

At the intersection of Alabama Ave. and Rochester, Alabama Street Oil Co. is rigging up to drill its H. B. No. 1.

Fernando Wildcat Cores Oil Horizon

Oil sand has been cored in Casa Grande Oil Co.'s Lopez-Lundy No. 1, located at the north mouth of Lopez Canyon in sec. 1, 2n-15w, near San Fernando. According to unconfirmed reports, the first sand was at 2105 ft. and the hole bottomed at 2140 ft. where a production test will be made. The oil sand is light brown in color and of good odor but rather tight, indicating a low porosity.

Chas. E. Moose, president of Casa Grande, reports that casing is being run for an immediate trial of the sand's productive possibilities.

Havenstrite Gets Dominguez Wildcat

R. E. Havenstrite, rather than the California Western Oil Co., will drill the Larrondi No. 1 wildcat west of Dominguez Hill. The project is ready to spud in.

Wildcats Rumored For Newhall Area

Two new wildcats are rumored for the Newhall area one a major project and one an independent.

Consolidated Petroleum Co. is below 3600 ft. in Needham No. 4 while Tamas Oil Co.'s well in sec. 13,3-16 is at 2320 ft.

Coyote Test Finds Lower Anaheim Barren

Attempting to extend production on the north flank of the East Coyote field, Sonwell Oil Co. found the lower Anaheim zone barren and is plugging back to test the upper section of the horizon between 3100 and 3385 ft. The hole was carried to 3837 ft.

Union Oil Co. resumed work on Hole No. 21 and is drilling below 3850 ft. The location is within the proved area of the field.

New "degasser" almost wholly eliminates both carbon monoxide and carbon dioxide gasses in the exhausts of truck and bus motors.

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Back-patting can turn into finger-pointing in a jiffy when per barrel pumping cost is being analyzed from the auditor's cold report.

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Coastal District

Sunset Suspends Carpinteria Well

Having passed from Temblor shale into Pliocene sand at 3040 ft., Sunset Oil Co. has suspended drilling in its Carpinteria wildcat to recheck the geology of the area. After drilling through a fault zone, a whitish gray sand, identified as Santa Barbara formation, was entered. No oil showings were found and drilling was stopped at 3413 ft. in the same horizon. As the sand would make an excellent oil reservoir, the company is checking possibilities of there being a closure higher up dip.

C. C. M. O. Gets Rincon Producer

Finishing its Rincon No. B-29 at the plugged depth of 4210 ft., Chanslor-Canfield Midway Oil Co. obtained a 200 bbl. clean flowing well. First drilled to 4800 ft., 8⅝ in. casing was cemented at 4725 ft. and "c.p.ed" at 4160 ft. When the bottom was found wet, the water string was perforated 4160-4207 ft. and a pre-pack liner landed on the plug at 4210 ft.

Gen. Pet. Starts New Goleta Test

General Petroleum Corp. has erected a derrick for a new attempt to extend the Goleta gas field and, if possible, to discover oil production. The latest try is called More No. 5 and is located 562 ft. north and 8580 ft. east of the southwest property corner.

Transoceanic Completes M'divani No. 4 at Mesa

Transoceanic Oil Corp. recently finished its M'divani No. 4 at Santa Barbara Mesa field pumping an estimated 100 bbls. a day from the Vaqueros sand. Bottomed at 1584 ft. and with water string cemented at 1531 ft. the well was completed with a "pre-pack" type of perforated liner.

Page Gives Up Nipomo Wildcat

Page Petroleum Co. abandoned its Callender-Mesa No. 1 at 1472 ft. after picking up the Franciscan schist at 1415 ft. The well was located in sec. 15,11-35, near the old Aviation Oil Co. well which also encountered the basement at a shallow depth.

Nine Springs Abandons Los Olivos Wildcat

Nine Springs Oil Co. recently abandoned its Brinkerhoff No. 1, a wildcat well drilled to 3272 ft. in sec. 10,7-30 near Los Olivos. Several attempts were made to obtain production below 8⅝ in. casing cemented at 2475 ft.; all ending in failure. The project, which is bottomed in Franciscan, has been standing idle for two years.

United Western Oil Co.'s Bradley No. 1, sec. 15,7-30, is standing idle after a production test recovered only water. The hole is reported bottomed in Franciscan at 3935 ft.

Sec. 20 Retests Eocene Horizon

Section 20 Oil Co. is preparing to retest the lower portion of the Eocene oil sand encountered in its Tar Creek wildcat in sec. 20,5-19. Bottomed at 4157 ft. and with 6⅝ in. casing cemented at 3642 ft., the well tested wet and a string of 4¾ in. was landed and cemented through perforations at 3850 ft. A new production test will be made within a few days. The Eocene was topped at 3700 ft.

Lomas Completing Santa Maria Well

E. H. Lomas, individual operator from Santa Barbara, is completing his Reg No. 1 in the Santa Maria Valley field. Bottomed in Franciscan at 5600 ft., the well employs approximately 350 ft. of oil bearing formation.

Union Oil Co. is drilling two wells in the field, Frank Vicente No. 6 having just passed the 2000 ft. mark and O'Donnell No. 2-3 nearing final bottom at 4950 ft. W. R. Gerard is drilling his Berneiser No. 1 below 3650 ft.

Camden Oil Drills South Mountain Well

Camden Oil Co., a new company formed by Harry Rilling, is rigging up to drill a well at South Mountain in Ventura county. Location for the test is given as 1473 ft. north and 330 ft. west of the center of sec. 13,3-21.

Cal. Alliance Finds New Ventura Horizon

Drilling within 150 ft. of three unsuccessful tests, one of which bottomed at 8137 ft. and attempted to produce the interval 6400-7900 ft., California-Alliance Petroleum Co. opened up an entirely new productive horizon on the north flank of the Ventura Avenue field. Finished at 7477 ft. with 8⅝ casing cemented at 7337 ft. and a perforated liner landed on bottom, the company's Hartman Ranch No. 1 came in flowing a 500 bbl. daily rate of 30.2 gravity oil cutting 0.5%.

The new zone, which appears to be an accumulation controlled by the Barnard Thrust, is believed to pinch out to the south and, conversely, to thicken to the north as explained in Engineer Ed. R. Millett's article on page 24 of this issue.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Santa Barbara County					
Carpinteria	Sunset Oil Co.	1	32, 4-25	3413	Idle
Cuyama	Hearte, O. K.	1	11, 9-25		Rigging up
Goleta	Gen. Pet. Corp., More	5	22, 4-28		Rig
Lompoc	Sun-Bell Drilling Co.	1	28, 8-34	2982	Idle
Los Olivos	United Western Oil Co.	1	15, 7-30	3935	Idle
San Luis Obispo County					
Elk Horn	Calif. Pet. Prod., Irons	1	19, 10-24	2470	Drilling
	Newton, S. M., Stafford	1	18, 31-21	5075	Drilling
	Newton, S. M., Well	1	3, 32-21		Grade
	Todd Pettigrew & Assoc.	1	8, 32-22		Rig
Midway	Foster, Robt., A., McKee	1	2, 32-22	5075	Cleaning out
Nipomo	Page Petroleum Co., C-M	1	15, 11-35	1472	Abandoned
Paso Robles	Epco, Inc.	1	27, 26-13	6146	Idle
Ventura County					
Conejo	Sulphur Springs Oil Co., Janss	1	33, 2-19		Rigging up
Ojai	Argo & Rynning, M & A	1	7, 4-21		Location
Santa Susana	K. C. Oil Co., Marr	1	32, 3-17	1014	Drilling
Sespe	Nevada-Fortuna Oil Co.	1	13, 4-19		Rig
	Renard Oil Co.	1	6, 4-19	720	Drilling
Shiells Canyon	Galveston Oil Co.	1	5, 3-19	3140	Cleaning out
South Mountain	Rilling, Harry	1	13, 3-21		Rigging up
Tar Creek	Section 20 Oil Co.	1	20, 5-19	4157	Standing cmtd.

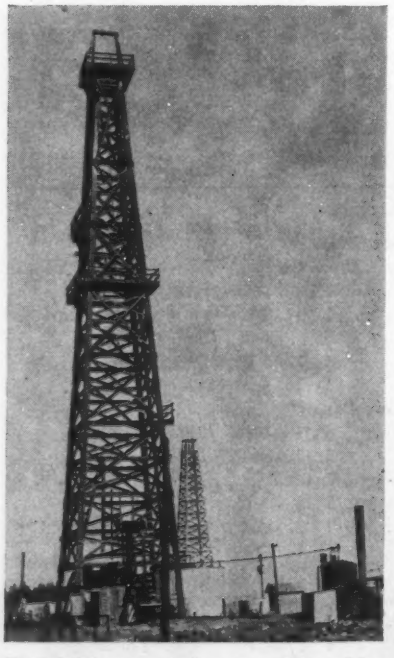
The formation has been called the Hisey Zone after Lyman C. Hisey, president of Alliance Petroleum Co. and California-Alliance Petroleum Co. Mr. Hisey and Ralph B. Lloyd, as individuals, during the past year wrested the Ventura Avenue spotlight from the major companies who have held the center of the stage since the field's discovery.

East of the California-Alliance well, Lloyd Corporation has two wells nearing completion, Nos. 3 and 4. The former is standing with 7 in. casing cemented at 9415 ft. while the latter is drilling below 9000 ft.

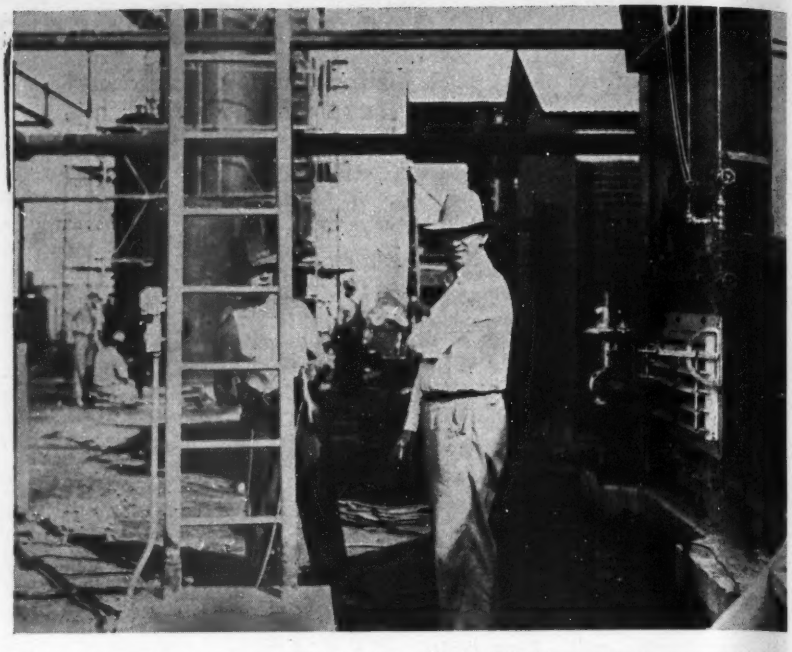
British-American Oil Producing Co. spudded in Hartman No. 9 after building a new derrick. The old rig collapsed while skidding from No. 8.

Latest major company completion was Shell Oil Co.'s Taylor No. 102, which, bottomed at 7706 ft. and open below 7115 ft., came in flowing 1190 bbls. a day of oil and 2,575,000 cu. ft. of gas. The well is located in the middle of the large property.

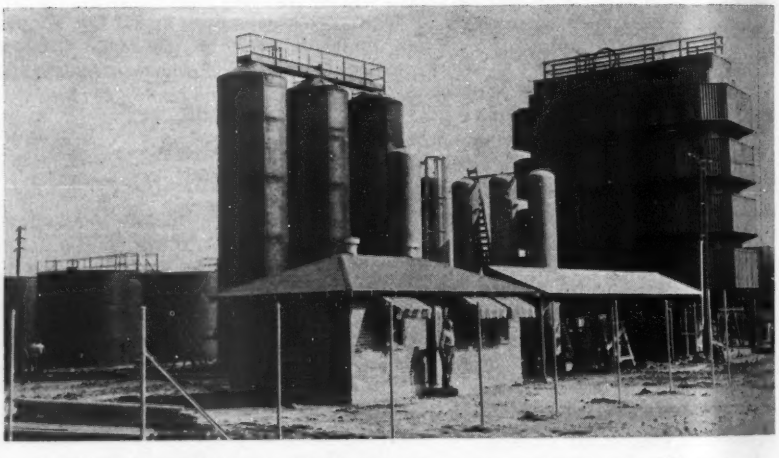
Following the discovery of the new Hisey zone, Tide Water Associated Oil Co. started to rig up Hartman No. 20 for deepening from present bottom of 5407 ft. It is probable that other offsets will be drilled by Tide Water Associated and by British-American on the Bolsa Chica Hartman lease.



This well presented a special problem which, when finally solved, changed its status from a long idle dry hole to the discoverer of the Five Points field at Huntington Beach. A run of a strata surveying instrument caused the transformation. The new rig in the background is Petromont No. 2.

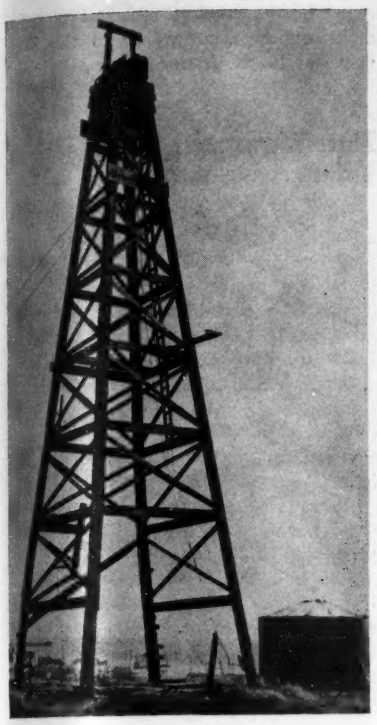


Looking toward the camera is R. M. Allen, of J. B. Gill Corp., who is supervising construction of Pathfinder's modern refinery near El Camino's plant.

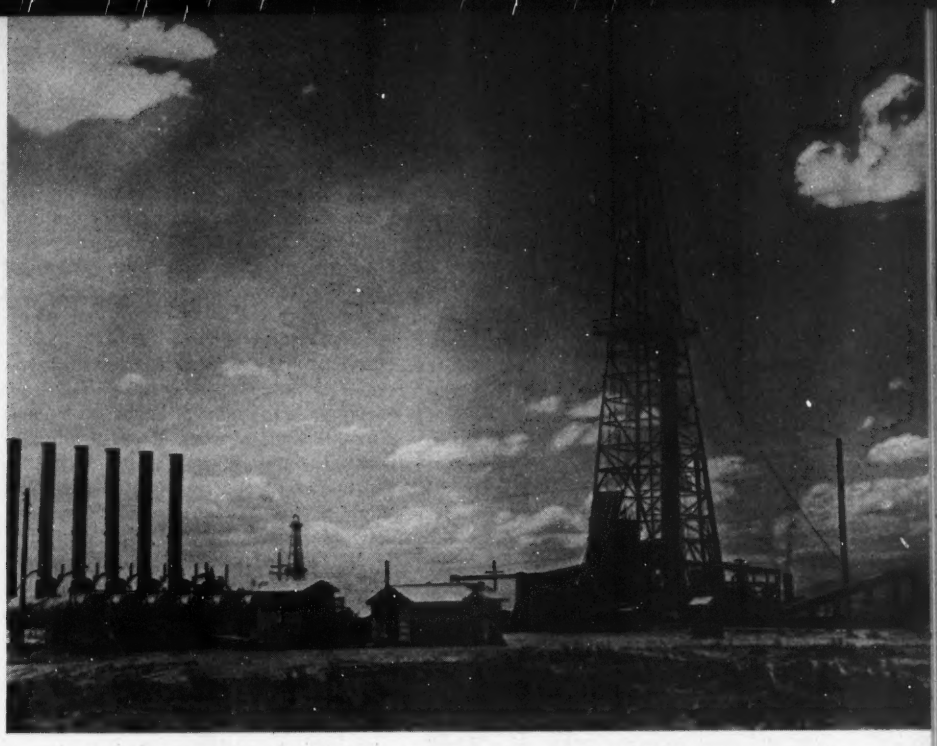


Speeding to completion is Fletcher Oil Co.'s new refinery near Wilmington. Cracked and poly gasoline will be produced.

Just out of Montebello in any direction you find big refineries and little plants like these. Not all of the little refineries are suppliers for the "cut price" gasoline dealers. The plants shown here are experimental and road oil units.



This relic of early day oil prospecting brings up a production problem yet unsolved: that of successfully exploiting the tar sands in the Newport Beach area. Though idle for many years, gas and heavy oil still bubble up in the cellar of this old well. In the low background is Newport Pier.



General Petroleum's Sullivan No. 1 is rigged for speed and distance.

Dowell Offers Acid Jet Gun

N. R. Crawford, general manager of Dowell Incorporated, announces a new tool known as the Acid Jet Gun, for servicing oil and gas wells.

Mr. Crawford claims that the scope of chemical service for oil and gas wells, so vital to the oil producing industry, has been greatly expanded through the development of the Acid Jet Gun. According to Mr. Crawford, the tool increases the scope of acidizing by making possible the treatment of wells heretofore considered untreatable and greatly improving the technique of acidizing.

Introduced and perfected by Dowell, the Acid Jet Gun is designed to be run on the end of, or as a section of the regular tubing string. It may be used in conjunction with various auxiliary chemicals, packers, circulating tools or release valves and may be raised, lowered or rotated during the process to accord effective jetting on the entire section desired to be treated.

It is further claimed that this tool permits streams of acid to be shot out horizontally or vertically against the walls or bottom of the well bore. The acid is projected through small diameter nozzles, designed for effectively removing Dowmetal pipe, cement, lime and calcareous deposits at a distance of 15 inches from the nozzle. This action, it is said, may be obtained under fluid such as oil, water, acid or any fluid of approximately the same viscosity as acid, at 1000 pounds per square inch differential pressure across the jets.

"This special tool offers many advantages," said Mr. Crawford. "Through its use a high degree of mechanical efficiency is added to the chemical treating solutions. This results in a more economical and efficient treatment of oil and gas wells.

"Speaking of specific uses for the Acid Jet Gun," Mr. Crawford continued, "This new tool, which is now available to oil producers everywhere, is indispensable for a number of important operations. It removes cement or mud sheaths from the walls of a well, jets out portions of a cement plug and cleans any type deposits from the face of the pay. Paraffin deposits may be removed from a well by jetting Dowell Paraffin Solvent through the gun. Perhaps one of

On Caminol's Montebello 3-17 are, left to right, G. Sonnenberg, K. E. McCroskey, William Riley, E. D. Culbertson and Oliver Covall.

its most interesting uses is its application for quickly removing Dowmetal pipe and the cement behind it. It also finds important application in liner or screen perforation cleaning, in deepening a well in limestone formations and removing lime cavings.

"The acidizing of producing formations, in fact the entire acidizing technique is now greatly improved," continued Mr. Crawford. "This new tool of ours offers a positive means of mechanically directing the acid to the exact spot to be treated. Thus the scope of our operations has been extended widely."

Introduce Dia-Loy Sucker Rod Coupling

The Dia-Loy Sucker Rod Coupling is designed to solve all abrasive and corrosion problems found in sandy, crooked and sour pumping wells. It is to be applied on a string of rods in the same manner as the conventional rod couplings now commonly used.

Left, Dia-Loy Coupling; right, Dia-Loy protector.

The Dia-Loy Coupling is of standard API construction. There are two types of couplings. Type A having a body made of heat treated steel with tensile strength sufficient to carry the heaviest well loads, and Type B having a body of nonferrous alloy of high tensile-strength and toughness also capable of carrying heavy loads. To the body of each of these types a hardened ring of special alloy is combined under a process for which a patent has been applied. This ring is of a large cross section in thickness and is the same uniform hardness throughout. It will retain its physical properties under heat ranges up to 1800 degrees.

Due to the special design and construction employing the hardened ring of special alloy this rod coupling will not score, wear or siege itself or the tubing under the severest abrasive conditions, the makers say. These couplings have been placed in constant operation in very abrasive wells over a period of a year. Conventional case hardened couplings have had to be replaced because of excessive wear, while Dia-Loy couplings in the same strings show no appreciable signs of wear. It was also found that there was no appreciable wear on the tubing at the position of the Dia-Loy Couplings. Experience has proved that wherever Dia-Loy Couplings are used large savings have been effected in rod replacement, coupling replacement, pulling expense, down time and power, says engineers of the Dia-Loy Co.

Dia-Loy Perfects Sucker Rod Protector

The Dia-Loy Sucker Rod Protector consists of a ring of special alloy, the same material as used in Dia-Loy Sucker Rod Couplings. The ring is split into two halves which are applied to the sucker rod in any desired location and are held in place securely by babbitting to the rod. The Protector may be applied at any point on the sucker rod and as many Protectors as are necessary may be used.

In addition to preventing rod wear and subsequent parting, the Dia-Loy Sucker Rod Protector serves as a stabilizer to reduce vibration and resulting crystallization in the rod. On fully equipped rod strings, the highly polished bearing surface of Dia-Loy not only gives protection to the tubing and rods but greatly reduces the friction load which means a large saving in power and far less rod breakage. Cuttings, caused by wear of tubing, rods and couplings which fall into the pump, can be practically eliminated by the use of Dia-Loy Protectors and Couplings, according to the Dia-Loy Co., 101 N. Alameda Ave., Burbank, Calif.

Line Wrapper Offers Advantages

Numerous advantages are claimed for a portable machine for coating and wrapping line pipe in the field instead of applying the protection at the mill or by hand. The portable method eliminates all hazards of damage to the coating while in storage, as well as potential damage in transit.

For oil, gas and gasoline pipe lines, only external protection is needed. For water mains, both external wrapping and internal coating are required.

Portable wrapping machines have been developed for both external and internal protection. They are operated as the pipe is unloaded. In addition to removing the hazards of damage to coating while in storage or in the course of transportation, the field machine wrapping method permits the protection of the exact lengths required for the job.

These machines will handle pipe of any size from 1 in. to 30 in. diameter, with a capacity of from one mile to two miles a day, depending upon the size of the pipe. They require a minimum of labor, operate to owner's specifications, and permit inspection as the line is laid. Further information can be obtained by addressing Non-Corrosive Products Co., 2016 Laura Avenue, Huntington Park, Calif.

One person out of every 45 owns a car in Germany; in America, it's one out of every five.

Of course there is one way to be dead sure of a good used car—be the first to use it.

Portable pipe wrapping machine in field operation.

New MacClatchie Weight Indicator

Great accuracy, sensitivity and freedom from temperature changes are some of the features claimed for the new MacClatchie Weight Indicator, which is made by MacClatchie Manufacturing Co. of Compton, Calif. This new Weight Indicator incorporates a new type double action hydraulic diaphragm unit, which is suspended freely in a force parallelogram without any possibility of mechanical or frictional losses, the makers say. This

construction, they claim, insures a more positive, accurate and sensitive reading under all types of operation.

The large diameter gauge insures maximum visibility. Any one gauge may be removed from the case without impairing the use of the other gauges. The pump assembly is mounted stationary in the bottom of the instrument case.

Another feature which contributes to its greater accuracy the makers say, is that the fluid is held within the center disc, and protected on both sides by a heavy rubber disc and the metal housing of the diaphragm. Also it is protected on the outer rim of the housing by a rubber covering.

This diaphragm unit of the MacClatchie Weight Indicator is completely surrounded by a special temperature insulator so that the temperature change is reduced to a minimum. The copper tubing which connects the diaphragm unit with the indicating gauge is also thoroughly insulated. It is securely held in the center of a flexible conduit packed with insulating material.

Friction has been practically eliminated by the manner in which the diaphragm unit is suspended on the dead line, says MacClatchie. The direct inward force against the diaphragm absolutely prevents any loss due to friction, giving greater accuracy and sensitivity.

The diaphragm unit is so designed that it can be placed on any size of drilling line and no adjustment, special clamps, shim adjustments or other special equipment is needed to install the unit on any particular size of drilling line.

Rigid Tool Co. Adds New Vise and Stand

The Ridge Tool Co., Elyria, Ohio, has added to its Rigid line of pipe tools a vise complete with three legged stand that offers many new convenience features.

The legs are so constructed that they give perfect balance when set up and prevent tipping. They are hinged at the tray, fold together compactly and fasten with a chain for convenient handling and carrying. Legs equipped for screwing to plank or floor if desired.

The tray is wide and roomy providing

plenty of space for dope pot, oil can and tools. Tools can be hung on the raised rim as well as in slots provided in the tray. There is a pipe rest and three different size pipe benders that will not collapse the pipe. It is equipped with quickly adjustable screw for ceiling brace to hold vise rigid while in use.

Rigid Tri-Stand Vises are available in 2½ in. yoke and 4 in. chain patterns —made of special strong malleable metal, jaws of highest quality tool steel, scientifically hardened for firm grip and long wear. Yoke vises have No-Mar jaws that protect pipe surfaces.

This new Rigid Tri-Stand Vise is being distributed only through supply houses.

The Pacific Section of The American Association of Petroleum Geologists holds its 16th Annual Meeting Nov. 9-10, at the Ambassador, Los Angeles. Noted speakers and fine entertainment are scheduled.

Bailey Introduces Flame Detector

A new Bailey Meter product which warns boiler operators of possible furnace explosion that may result from loss of ignition is described in Bulletin No. 210 "Bailey Flame Detector." Copies are available from Bailey Meter Co., Cleveland, Ohio.

This eight-page bulletin points out that the best assurance against an explosion hazard resulting from the loss of ignition is for operators to be fully acquainted with furnace conditions and for them to know that ignition is satisfactory. The bulletin describes and illustrates the construction and application of this device which affords protection against furnace explosion.

This is the new Bakersfield, California, Branch Office and Warehouse of Security Engineering Co., Inc., which was recently put into operation. A complete stock of Securaloy Drillable Liners and Well Production Accessories as well as Sievers Reamers, Reamer Cutters, Parts, etc., are carried in the warehouse and sufficient shop machinery has been installed to take care of the necessary field work. Jud Williamson and Casey Jones, who have been handling the sales and service of Security products in the San Joaquin Valley, will operate out of the new branch and will be assisted by Scott Neuls, transferred from Whittier to Bakersfield to act as warehouseman. Karl Clark will continue to cover the Coalinga and Kettleman Hills fields out of Coalinga, California. From this branch, twenty-four hours, 7 days a week Security service will be available to the producing fields in the San Joaquin Valley.

Business and Professional Directory

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FOR RENT

Arc Welder, 300 amp. Hobart Gas Driven, Trailer Mounted. Phone Whittier 43182 or Write Box 716, Santa Fe Springs, Calif. 11-20-b

FOR SALE

180 feet 15½", 880 feet 12½; 1050 feet 8¼; 1800 feet 5-inch used oilwell casing at Eureka, Calif. Inquire Box 82. 10-20d

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1500 ft. 2½" extra-heavy drill pipe, quick change couplings. Portable rotary rig for sale. Madsen, 1569 W. 48th St., Los Angeles, Calif. 12/5-d

MAPS

Large maps of Los Angeles Basin oil fields and map showing all California oil fields. Price $15.00 each on paper and $20 each on cloth. Individual state oil and gas maps of Mid-Continent and Rocky Mountain regions. Maps show geological cross sections at base. These maps indicate wells drilling, wells producing and abandoned, with depths.
All maps revised up to date of purchase.
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Oil Men's Calendar

C.N.G.A. Meeting First Thurs. Each Month.

November

2-3—Society of Automotive Engineers, Fuels & Lubricants Meeting, Mayo Hotel, Tulsa, Okla.

2-4—American Institute of Mining & Metallurgical Engineers, Industrial Minerals Division, Tuscaloosa, Ala.

8-16—National Motor Truck Show, Navy Pier, Chicago, Ill.

13-17—American Petroleum Institute, 20th Annual Meeting, Stevens Hotel, Chicago.

13-17—Interstate Conference on Automotive Taxation, Western Division, sponsored by American Petroleum Industries Committee, Stevens Hotel, Chicago.

14—25-Year Club of Petroleum Industry, 1st Annual Meeting and Dinner, Stevens Hotel, Chicago, Ill.

December

14-15—Petroleum Electric Power Association, Texas State Hotel, Houston, Texas.

1940

April

10-12—American Association of Petroleum Geologists, Chicago.

11-12—American Petroleum Institute, Eastern District, Division of Production, Columbus, Ohio.

May

18-25—Int. Pet. Exposition, Tulsa.

California Crude Oil Production

Two Weeks Ended October 14, 1939

	October Daily Quota	Average Daily Production	Excess
San Joaquin Valley			
Belridge—North	12,865	11,667	*1,198
Belridge—South	2,143	1,128	*1,015
Buena Vista	16,948	15,806	*1,142
Canal	5,790	5,390	*400
Coalinga-East(Eocene)	9,020	9,259	239
Coalinga—East-West	16,008	11,923	*4,085
Edison	2,244	2,394	150
Elk Hills	7,779	10,165	2,386
Fruitvale	6,189	7,092	903
Greeley	2,940	2,473	*467
Kern Front	7,385	6,475	*910
Kern River	8,525	3,739	*4,786
Kettleman No. Dome	34,477	51,664	17,187
Lost Hills	4,035	3,588	*447
McKittrick	3,869	3,600	*269
Midway	37,874	31,680	*6,194
Mount Poso	10,195	11,123	928
Mountain View	9,682	9,899	217
Rio Bravo	7,480	7,618	138
Round Mt. and Coffee Canyon	8,064	8,636	572
Ten Section	8,664	8,966	302
Wasco	1,325	1,276	*49
Other Fields	5,026	5,313	287
TOTAL	228,527	230,874	2,347
Coastal Counties			
Elwood	3,864	4,115	251
Rincon	2,442	3,654	1,212
Santa Maria	8,435	3,526	*4,909
Gato Ridge	2,674	4,077	1,403
Santa Maria Valley	18,992	10,228	*8,764
Santa Paula-Newhall	6,000	6,757	757
Ventura Avenue	30,146	36,474	6,328
Other Fields	5,380	5,579	199
TOTAL	77,933	74,410	*3,523
Los Angeles Basin			
Alamitos-Seal Beach	7,045	7,316	271
Brea-Olinda	8,346	6,067	*2,279
Coyote—East	3,097	2,677	*420
Coyote—West	10,192	9,778	*414
Domingues	16,444	19,449	3,005
El Segundo	2,983	3,023	40
Huntington Beach—New and Old	23,100	27,473	4,373
Inglewood	13,058	12,004	*1,054
Long Beach	41,107	45,857	4,750
Montebello	5,986	6,341	355
Montebello-West End	17,464	20,088	2,624
Playa del Rey	4,357	4,658	301
Richfield	7,487	8,449	962
Rosecrans-Athens	8,553	10,611	2,058
Santa Fe Springs	24,916	27,476	2,560
Torrance	5,479	5,414	*65
Torrance "34" and "D & B"	8,513	10,017	1,504
Wilmington	80,998	87,346	6,348
Other Fields	3,470	4,030	560
TOTAL	292,595	318,074	25,479
STATE TOTAL	599,055	623,358	24,303

*—Shortage.